ADDRESSES AND ORIGINAL ARTICLES

PRACTICAL POINTS IN DIAGNOSIS AND ROUTINE TREATMENT OF PULMONARY TUBERCULOSIS.*

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IT is a prevalent idea that sanatorium treatment is merely a matter of open air. This may be a true description of some sanatoria; but most medical superintendents are agreed that the drawback to many sanatoria is over-much fresh air and that the alpha and omega of successful treatment is *rest*, properly applied and sedulously controlled.

The following are a few practical points in the diagnosis and treatment of pulmonary tuberculosis and a brief description of the routine at the Cheshire Joint Sanatorium. It is not claimed that this treatment "cures"; but there may be other reasons for poor results.

Delay in Beginning Treatment.

Like cancer and venereal disease pulmonary tuberculosis should be tackled early. Only 14 per cent. of our cases arrive at the sanatorium within three months of the onset of symptoms; a further 21 per cent. come within six months; 19 per cent. within twelve months, and another 22 per cent. within two years. Alas, 24 per cent. do not come until more than two years have elapsed. Our patients are classified according to Turban's classification into Stadium 1 (15·6 per cent.), Stadium 2 (18·2 per cent.), and Stadium 3 (66·1 per cent.)—i.e., two-thirds are advanced cases of pulmonary tuberculosis. Again, four out of five have tubercle bacilli in the sputum on admission.

There is obviously something amiss; but in the presence of such old-standing material it is useless decrying sanatorium routine and its results.

Where is the weakness? We must conclude that somewhere there is a gaping hiatus and this hiatus is the cause of most of the poor results; for the advanced case must once have been early, and early tubercle is curable. Probably there are a number of factors responsible for the hiatus—e.g., the economic position and the prejudice of the lay people, the stressing of prevention as though it were opposed to treatment, the conditions of work and pay of some physicians in the tuberculosis service, the scepticism of the general practitioner, and lastly, and most important, the lack of knowledge.

The lay people are afraid of pulmonary tuberculosis and, unfortunately, not afraid of the causes of pulmonary tuberculosis. Many of them spend their leisure hours in a body-destroying manner and do not indulge in sufficient air, exercise, and rest in their daily life, while their diet, though vastly improved, is still unphysiological. Further, though suspicious of pulmonary tuberculosis, they avoid a physician up to the last moment; for they realise that they will probably be sent away and quite possibly lose their employment. When in the sanatorium they know that their absence from home means less food for their families, and so they cannot afford time to tackle the disease adequately. Some do not realise the nature of the disease, for when weight increases and a sense of fitness returns, they, against all advice, insist upon going home. Again, in other cases the friends see the patient with rosy cheeks, looking better than ever and perhaps doing some gardening, and at once they demand his discharge saying there can be nothing wrong.

This ignorance and the economic position of the laity lead to delay in diagnosis, delay in seeking treatment, refusal of routine treatment, and to a curtailment of the sojourn in the sanatorium.

THE TUBERCULOSIS SERVICE.

It is quite right to stress the preventive aspect of public health work, but it is wrong to ignore and belittle treatment, which at present must be an essential part of a full-orbed public health scheme. The wide outlook is shallow if efficient treatment is not prominent, for imagination and sympathy are still required in public medicine, and though the eye be well practised in nature and great schemes of prevention be adumbrated, let not our minds be bounded and mean.

Sanatorium sites are often badly chosen; hopeless buildings erected; poor equipment purchased and essential equipment despised; a man appointed to the post and adequate assistance refused. He cannot do the work, and so we get merely the semblance of treatment.

The unsatisfactory conditions of service of many tuberculosis officers and medical superintendents is the next cause of failure in our handling of the tuberculous. There are excellent tuberculosis officers with commensurate facilities, and they are specialists of a high rank; but often tuberculosis officers are badly paid and denied laboratory and X ray facilities and even clerical assistance, so that their time is wasted and their keenness is destroyed in filling up endless forms which would be more valuable if filled up by a clerk from competent data made available by the tuberculosis officers whose time should be spent doing consulting work and not in office routine.

What has been said of the tuberculosis officer applies in all particulars to the medical superintendents. Even if they keep up to date in general medicine and in the treatment of pulmonary tuberculosis, whilst they have the consolation of work well done they have often nothing else. Committees too commonly only demand a low figure for running the institution and are contented therewith.

Before dealing with the general practitioner, I will refer to our lack of knowledge, as research is the weakest link. There are innumerable problems in tuberculosis that need solving—e.g., housing conditions are worse than ever; but pulmonary tuberculosis is on the decrease. Is this decrease due to the repeal of the Corn Laws? Is tuberculosis a disease of nutrition? What is adult tuberculosis?—a recrudescense or a reinfection, or perhaps one type is a recrudescense and another type a reinfection. Is pulmonary tuberculosis infectious? What else should be done in prevention? Would the provision of more beds in hospitals, sanatoria, colonies, and perhaps in convalescent homes, be the surest foundation for all anti-tuberculosis work? Research is the great need in prevention and treatment, but in the meantime apply what knowledge we have, shun false doctrine, and have more research.

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THE GENERAL PRACTITIONER.

The general practitioner—what of him? He is the backbone of medicine, preventive and clinical. Yet in his training to-day the medical student is divorced from intimate contact with tuberculosis—a deplorable state of affairs. So much time is spent in gaining knowledge of abstruse laboratory tests, which he will never perform; for all that he needs to know is when to call for and how to interpret the results of such tests; and rare medical diseases absorb an unequal proportion of his stay at the bedside. The teaching hospital has few or no beds for so common and serious a disease as pulmonary tuberculosis, and therefore we are not surprised that glaring phthisis, let alone its early manifestations, is not detected. The short course in tuberculosis given at certain centres does not meet the situation.

Some general practitioners are against sanatoria, more are sceptical, a few have a pathetic optimism about the curative power of the sanatorium, and there is a variety of general practitioners, small in number, who has a pathetic faith in an adventurer—especially in the foreigner. This variety will hold public meetings, raise funds, and disturb Parliament for his foreigner's sake. He will ignore, however, the findings of accredited scientists, both British and foreign. He does much harm, and forgets that there are plenty of physicians suffering from pulmonary tuberculosis who work and hope for the day when a real cure will be available. This generation apparently is still an evil and adulterous one, for no sign has been given unto us! The optimistic general practitioner finds an advanced case of pulmonary tuberculosis and insists upon sanatorium treatment, when really a hospital or nursing home would be the better place. Rightly, as I shall show later, the modern sanatorium has become more like a hospital; but it is not for hopeless cases.

The general practitioner who is against a sanatorium and the sceptical general practitioner, have probably been unaware of the type of case sent to the sanatorium and likewise they frequently confuse the issue. It is no argument against the sanatorium that the unfortunate patient must needs return to overcrowded home conditions and poverty. It is merely an argument for better social conditions—conditions probably improved more by political and industrial action than by any other means. Like Christianity, sanatoria have not failed, they have never been given a chance.

May I make this plea to the adversary and the sceptic? Give the sanatorium a chance. Get it built on a proper site; get an expert to advise on the buildings and the equipment, and give the physician who has to run it adequate assistance and finally supply suitable cases.

POINTS IN DIAGNOSIS.

As primarily the diagnosis and care of pulmonary tuberculosis rests with the general practitioner I stress the following points:—

1. Suspect pulmonary tuberculosis if a cough persists more than ten days and pay attention to the history of your patient and the classical symptoms of pulmonary tuberculosis.

2. When you suspect tubercle get, if possible, a positive diagnosis quickly, and should it happen the diagnosis cannot be made, treat the patient as tuberculous so long as you are in doubt.

3. Remember the sputum, temperature, pulse. Seek sputum, have it examined and again seek more sputum and send it up daily; get special methods adopted for examining it. The very earliest lesion may produce tubercle bacilli. A few negative resu may mean little; but do not insist upon a positi sputum before diagnosing pulmonary tuberculos Take the temperature. The temperature in an acu disease is readily and satisfactorily taken in moment or two, but temperature taking in ear phthisis demands time and needs to be tak accurately, whatever method is adopted. I pref rectal temperatures and they are taken with ordinary thermometer. Give the thermometer ti to act, particularly if attempting to obtain an o temperature. Record the temperature before exerci immediately on completion, and after three-quarte of an hour's rest. Take the pulse. Beware of t moderately rapid pulse.

4. Do not place your trust entirely in percussi and auscultation. By all means inspect, palpat percuss, and auscultate; but if the result is negati and the patient is ill, think it possible that yo tactile sense is poor and your hearing defectiv but, still more, realise that even cavities may refu to give signs on physical examination, and cavitie as will be shown on the screen, may *develop* in few months. Remember a recent onset may sho no physical signs and yet mean extensive involveme of lung.

5. Radiograph your patient and insist upon technically satisfactory picture. I do not mainta that the Coolidge tube has ousted Laennec's; but do insist that the chest has not been examined if technically perfect radiogram is not available, and go further and say that the earliest radiologic evidence is found only in good stereographic photographs. The stereo is not a luxury. It giv information earlier than the flat film and, in speci cases, information that can only be obtained by series of flat films.

The diagnosis of pulmonary tuberculosis may re upon symptoms alone, or a suggestive history obtained and tubercle bacilli are found, withou symptoms and without physical signs. Usuall however, before the appearance of tubercle bacil the stereogram reveals the focus, later this foc is seen on the flat film and, unfortunately, it is st later before the old methods of physical examinatio help—i.e., on clinical examination the lesion is n found or appears limited but X ray shows it to more extensive and alas, autopsy reveals it as massive infection.

In a word, pending diagnosis, treat your patient tuberculous, let the history and symptoms be yo main guide, hunt the sputum again and agai take the temperature and pulse, do a thoroug clinical examination repeatedly, and get a goo radiogram.

Management of Patient at Home.

The diagnosis having been made, interest in th patient should be redoubled. To him who believe sanatorium methods useless, I dare not speak; bu upon the sceptic and the optimist, I urge that th patient be put to bed in a room with door and window open, even though the house be small and in a crowde area, put your patient to bed and never mind ho he feels. Keep him in bed and keep him *cool*. Teac him to rest and to scrap most of the bed-clothes, fo you will save valuable time by this method. Earl disease demands absolute rest, and even talking i working and his friends must appreciate this thoug it will be difficult to get this simple remedy adopted Teach that walking about and loafing in the par looking for fresh air is entirely wrong. Instruct i simple hygienic methods and endeavour to see that are carried out. Encourage a wholesome ıd banish faith in excessive quantities of fats. ımend that the length of stay in the sana- . should be at least nine months—the earlier ıse the more important the length of stay. a sharp lookout on all contacts and be glad if negative. Watch the families, since probably st way to escape tuberculosis is by reasonable est, and air. These are methods of treatment, ossibly the best methods of prevention, within mily.

the discharge from the sanatorium the patients different classes. There are those who cannot those who can work under ordinary conditions, hose who should work under sheltered condi- -preferably in a colony similar to Papworth. the "can't works," for they are poles apart the "won't works," and encourage them to the Better if possible to encourage them as their gth fails to seek the shelter of a suitable hospital. ose who can work foster restful and reasonable , countenance work and discourage idling and hem to spend their off-time well. The dangerous are the free hours. I have come to fear six n o'clock at night. These are the risky hours e tuberculous. Cinemas, public houses, churches, ome fire, all should be banned. The home fire ? It is then the atmosphere resembles Central a in humidity and stillness of air; then that ıg gives place to laughter and laughter to ning and its attendant perils. The patients are opardy, so teach the friends this and let the nts, for a couple of years at least, after leaving anatorium, develop a quiet handicraft at these s in the bedroom, under conditions of moving and rest, and thus save themselves from cessary hazards.

me of the women patients, unfortunately, become pregnant. As with marriage, so with nancy, advice is sought and rarely followed. is a serious problem, for it is idle to pretend pregnancy is a normal physiological process r civilised conditions, and the tuberculous nant woman is in grave danger. We all know e who have weathered labour successfully; we know hosts who have become wrecks. commend an early therapeutic abortion; failing a Cæsarean section at term and send the mother k to the sanatorium as soon as possible, since a e in the household means no rest for the mother tuberculous mothers must have rest. Ideally, e should be special sanatoria for pregnant women.

f a slight ailment intervenes—such as a cold— ıt it by strict bed. The tuberculous also are le to all other ills.

The Sanatorium.

ype of case.—Granted that the temperament ight, doubtful, early, acute, and extensive cases uld be sent to the sanatorium; but it is uneconomic l unkind to send very advanced cases.

he aim.—The sanatorium aims, firstly, at educating patient in a correct mode of life and in simple gienic precautions; secondly, at developing in the tient a correct mental attitude towards the disease; d thirdly, at rendering him symptomless, his ıtum negative, and his sedimentation rate normal.

Classification at the end of treatment.—On discharge tients are classified into three groups: Quiescent, nproved, and Worse. Quiescence means the absence symptoms and signs, except those compatible ith a healed [illegible], and that the sputum, if present, has been negative over a period of three months. Patients are not discharged as "arrested" or "cured." The former term is reserved for those who have been quiescent for two years and the latter term for those who remain arrested for a further three years.

Routine.—The first thing is to verify the diagnosis and assess the case. A complete history is obtained, and to help in this important matter the patient fills up a form which serves to stimulate his memory, and this form is given to the medical officer in charge of the case when he comes to take the history. An accurate history is indispensable, and it should be entered fully in chronological order and be a record of which the medical officer is justly proud. The symptoms are likewise entered. Patients are often as unaware of their symptoms as of their history—e.g., cough becomes a habit and dyspnœa tolerable and unnoticed. Therefore, the nurse's help in this sphere is valuable. Respiration, pulse-rate, and temperature are taken every four hours—the temperature per rectum. The sputum is collected and measured. The weight, when stripped, the height, and the blood pressure are taken. The physical examination is comprehensive and naturally takes in all organs, and in order to remember axillæ we have charts of them as well as the usual charts of the thorax. Particular attention should be paid to the orifices—nose, mouth, and ears, and the larynx is always examined.

SPECIAL METHODS OF EXAMINATION.

Radiographic examination consists in screening and in obtaining suitable pictures. Screening, when the eyes are fully accommodated, is a definite gain. It will show movements and give a general idea of all parts of the chest. If little abnormal is seen, a pair of stereophotographs is demanded; if something unusual is seen—e.g., a cyst, a growth, or an aneurysm—photographs in specified planes may be ordered. The radiograms need to be "shot" in such a manner that another one can be taken at any future time, under precisely the same conditions, and therefore, in each case, a record of all constants is kept. An addition or reduction in body-weight will be the only variant and calls for an alteration in kilovolt peak only.

The laboratory.—A sample of *urine* is examined. A specimen of *sputum* is obtained in an ice-cream carton with a press-down lid. This container is cheap and guarantees the absence of tubercle bacilli from contaminants. If the specimen is negative to the usual Ziehl-Neelsen's test on three successive days, a seventy-two hour collection of sputum is obtained for gasolene concentration and if it is still negative an attempt is made to culture the bacilli on special media. The culture method has positive advantages: it is cheaper than guinea-pig inoculation and the result is known in about ten days. Some patients will not produce sputum and an effort is made to obtain this when examining the larynx.

The patient's *blood* is the laboratory's next concern and the rate of sedimentation is estimated. There are different methods, and the one we use is akin to Westergren's. The tubes are always at the same temperature and the readings are made at the end of each hour up to five hours and then after twenty-four hours and the result graphed. I should say here that the sedimentation rate is of high value in prognosis and if all else appears normal and the sedimentation rate is rapid, beware! It is desirable that a Wassermann test be done as a routine. We do a differential blood count on special cases only.

Dental surgeon.—All patients are seen by the dental surgeon who then undertakes any necessary treatment.

The clinic.—During the first fortnight the patient is in bed. By this time the mental attitude of the patient is probably known, for it is futile to ignore the mental side; chronic disease produces a chronic mental outlook and usually the consumptive has not been taught to be a consumptive and to accept life upon the terms upon which it is offered and therefore much is unintelligible to him. At the end of this fortnight the patient is brought to the clinic and all data are checked by the medical superintendent and his colleagues. Usually this means some slight alteration in the history and then the medical officers examine the patient together, and the findings—often composite—are put on the diagrams and these are correlated with the laboratory and X ray findings. After consultation, treatment and if necessary further special methods of investigation are prescribed.

Special tests.—The special method of further investigation may be by exercise, temperatures, tuberculin test, guinea-pig inoculation, blood counts, and by lipiodol—a valuable aid in differential diagnosis. The exercise test guides us as to activity. The tuberculin test, if negative, definitely excludes tuberculosis; if positive, it may occasionally give information about activity in the suspected focus. The guinea-pig inoculation is not called for so often now that concentration and cultural methods are being perfected. Lipiodol gives satisfying results in bronchiectasis, frequently not even suspected, and in new growths and abscess. I give lipiodol by the crico-thyroid route. Beforehand the patient is tested for iodism and thirty minutes before the injection of lipiodol he is made to cough up all sputum, given morphia and atropine and placed on the X ray couch with a loaded cassette beneath. A local anæsthetic is given, the oil is injected, the patient tilted to left and right and the shoulders drooped a shade during the injection. The film is exposed and at once the patient is screened and if sufficient oil is in, a stereo in the upright position is taken. There are few after-effects; but a cathartic is administered.

The sanatorium ought perhaps to have a bronchoscope.

Treatment.

The further treatment prescribed for the patient may be traditional sanatorium routine, tuberculin, sanocrysin, collapse therapy, or a combination of these methods.

TRADITIONAL ROUTINE.

Where possible, the traditional routine is applied to all cases. Treatment is controlled by accurate temperature and pulse record. The physician visits the patient daily, but valetudinarism is eschewed. Meals are regular and ample, and snacks are abolished. Air is abundant, but protection recommended. Rest is the keynote, for the better the rest the better the chance of recovery; and so lights are out by 8 P.M., and no routine nursing duties may begin until after 7 A.M.—eleven hours of quiet! This means untidy wards for the 9 A.M. round, yet what does that matter? Patients are more important than doctors and matrons. Strict rest for an hour before meals is enforced and the "cure" hours—ten to twelve and two to four—are rest hours for bed patients. Bed or absolute rest is enjoined until symptoms, temperature, and pulse warrant an advance. "Hurry slowly" is the best method. The diurnal swing of the temperature should not exceed one degree and its acme be not above 98·6°. The pulse rate should not exceed 86; but, of course, there are occasional exceptions.

Ultimately patients are allowed up for one hour and hour is added to hour until the patient is up for four hours, when occupational therapy—a handicraft—commences. When the patient is up all day, walks, games, and work are prescribed and this grading of the patient should be zealously performed and must cover games. The occupational therapy is insisted upon, for there is nothing to equal it in maintaining hope and the habit of work. Idling is as bad physically as it is morally. When the patient can do about six hours' work easily, is symptomless, with weight above normal, the sputum negative and the sedimentation rate normal, discharge is recommended, for this is quiescence. Many of the present type of case never attain to this and are discharged to their home or hospital as "improved" or "worse."

Each month the patient is re-examined by the medical officer and the sputum tested. Every two months, in addition, the sedimentation rate is graphed and at the end of three months a further radiogram is taken and the case reviewed completely at the clinic. At this review special attention is paid to the state of the sputum, the sedimentation rate graphs, and the X ray films.

SANOCRYSIN.

Occasionally I use tuberculin; but apart from saying that I still think this is a dangerous remedy, I pass to another dangerous drug—viz., sanocrysin—a double salt of gold prepared by Mollgaard, of Copenhagen. I have formed a very high opinion of the drug and use it in recent exudative cases, chronic cases with a recent exacerbation or spread, in artificial pneumothorax cases where the opposite side is diseased already or flares up during treatment and, though of lesser value, in chronic cases of fibrotic character with persistent tubercle bacilli. I think it useless in the face of an uncontrolled cavity and it should not be given when renal and intestinal complications are present.

This drug is given intravenously twice weekly, and the patient is kept in bed for the whole course, which takes about eight weeks. I use small doses, and the laboratory keeps a sharp look-out on the liver and kidney by means of a daily liver function and a delicate albumin test. The excretion of the drug is slow, and therefore we allow eight weeks' interval between two courses, and the second course is given only if there is radiological evidence of clearing. The dangers are those of administering a heavy metal.

All cases given sanocrysin by us were Turban 3—that is, advanced and many hopeless, and nearly all had tubercle bacilli in the sputum. In one series, followed up, both immediate and after-results are superior to sanatorium treatment alone, and the striking feature is not merely the alteration in the character of the tubercle bacilli but their disappearance from the sputum. For example, if we take cases treated by all methods, including sanocrysin, tubercle bacilli disappear in 39 per cent., whereas in cases treated by sanocrysin alone they disappear in 58 per cent., and we know from all sanatorium statistics how much better the after-results are when the tubercle bacilli are eliminated from the sputum. Despite the very advanced type which we treated by sanocrysin we get, after two years, the same excellent results in cases where cavities were controlled by other means, as in the cases who ha extensive trouble but no cavities—viz., 93·75 per cent. are alive, 69 per cent. are actually at work. This result in the worst type of case must suffice to demonstrate the value of sanocrysin, as space prohibits a complete analysis in this paper.

COLLAPSE THERAPY.

The aim of collapse therapy is to apply rest to the diseased part so that toxæmia may be controlled and healing promoted. Some simple methods of resting the diseased lung are efficiently strapping the side, firmly bandaging, applying sandbags, and for the patient always to lie upon that side. Some of the special methods are artificial pneumothorax, phrenic avulsion, and thoracoplasty.

ARTIFICIAL PNEUMOTHORAX.

Artificial pneumothorax is the method of choice. The rapidity with which a patient improves and the excellent after-results have established artificial pneumothorax as the greatest advance in the treatment of pulmonary tuberculosis.

A gas, usually atmospheric air, is passed into the pleural cavity at a known pressure, which is made possible by an apparatus that first measures the air given and records the pressures by a manometer. I do not propose going into questions of instruments and technique. The air is absorbed at different rates by different patients and so refills of air have to be given. The aim is not to compress the lung against the root, but to collapse the diseased portions and so put them out of action and permit partial but sufficient rest to abolish symptoms. This is the optimum pressure. I believe in giving small quantities of air, about 300 c.cm. and frequent refills if necessary, so that the lung rest is kept fairly constant. The pleura in time becomes more and more impervious to air and refills therefore less frequent. The treatment may have to be maintained for three or more years, but of course, the patient is an out-patient, and yet this long treatment is really the shortest treatment I know for pulmonary tuberculosis.

The indications for artificial pneumothorax are numerous. The classical case is the one-sided case, but I rarely see this type and my indications have been extended to include the very advanced and progressive cases, nearly all patients with cavities and hæmorrhages and laryngeal involvement. The limited lesion, if there be no cavities, is exempt from this treatment. It is sometimes applied simultaneously to both sides, sometimes to one side first, and later to the other.

There are some operative dangers—e.g., pleural shock and air embolism—but these are surely rare, for in my 1100 artificial pneumothorax patients I have not as yet met them. There are complications, particularly fluid, and this, in my opinion, is more than a nuisance and demands removal by air replacement and the pleural cavity bathed with methylene-blue, acriflavine, or alepol. There are difficulties, such as a mobile mediastinum and pleural adhesions, which demand special methods such as oleothorax and cauterisation respectively.

In the control of artificial pneumothorax I think radiography is essential, though without X ray control the treatment is possible, but undesirable. The screening of a case at each refill gives much more information about the diseased side than a photograph does; but a radiogram is needed at least every three months to give data about the uncollapsed side.

When artificial pneumothorax patients are discharged from the sanatorium, they once again come under the practitioner's supervision. They should be encouraged to observe sanatorium routine and to continue with refills. If a sudden temperature develops, suspect fluid, even pus; but do not interfere until symptoms demand it, and if possible, send such cases as emergencies to the sanatorium. Should this be impracticable, spare the ribs at first and remove the fluid with a Potain's or other aspirator, and to do this place the patient in a sitting position. Gain entrance high in the axilla with the cannula and dip it downwards to the diaphragm. Introduce an ordinary 5 c.cm. syringe needle into the pleural cavity above the cannula and lightly plug it with cotton-wool. This needle allows air to enter as fluid comes off. To leave fluid untouched when distress occurs may lead to such a pressure that both an external and a broncho-pulmonary fistula may result —grave complications.

If there is sudden gross dyspnœa and distress, suspect spontaneous pneumothorax; the physical signs when such a condition is superimposed are so protean in character that they cannot be hinted at here. Act upon suspicion and insert a 10 c.cm. syringe needle into the affected side and if necessary play upon it—i.e., as the patient breathes keep a finger on the lumen of the needle for inspiration and off it for expiration. Spontaneous pneumothorax, however, may occur in the opposite side when the physical signs are more obvious and similar emergency treatment should be given.

Occasionally bronchitis or pneumonia may supervene on the contralateral side. The new condition should be treated on the usual lines, and if acute symptoms occur one should resort again to the 10 c.cm. needle on the pneumothorax side.

When is the pneumothorax to be abandoned? Unfortunately, many will obliterate too early. The time to abandon the others is not a matter of empiricism, but of trial under careful control. Excellent if the patient can be readmitted to the sanatorium for the trial but this is rarely done. When it is resolved to abandon, the interval of refill is extended and the patient encouraged to report any return of symptoms and the physician to seek for the return of signs. Please weigh your patient weekly at this critical time and question him closely, and if your trained eye notices anything amiss kindly report it, for the tuberculous is anxious to finish his treatment and often prepared to run the risk. "Look around the habitable globe and see how few know their own good or knowing it pursue."

If artificial pneumothorax fails it is usually because of pleural adhesions. This happens in 20 per cent. of my cases, and in order to give an impression of the after-history I must be content with saying that only 9 per cent. of these cases are at work and even these all had a phrenic avulsion. In patients, on the other hand, with a useful collapse, surely comparable or control material, 46 per cent. are at work. I do a phrenic avulsion on the pneumothorax side as a routine, unless it has been necessary to perform it on the opposite side, as it gives additional rest, spreads out refills, and limits the size of the hemithorax—a desideratum to save stress on fibrous tissue when the pneumothorax is obliterated.

PHRENIC AVULSION.

This is the operation of removing the phrenic nerve in its entirety. Simple section of the nerve is inadequate because more than 25 per cent. of all people have an accessory phrenic which would still activate the diaphragm. Under local anæsthesia, the nerve is sought through a half-inch incision in the neck, gripped, the proximal end cut, and then, by traction and twisting, pulled out—if possible in its total length, and aiming to remove at least 10 cm. and so be sure of destroying the accessory phrenic.

Phrenic avulsion, or a "phrenic" as it is familiarly called, I perform in almost any case with extensive trouble, and it is my stand-by in the artificial pneumothorax failures. It may be performed on one side and a pneumothorax on the other. It is normally undertaken before a thoracoplasty, and is useful to relieve persistent symptoms—e.g., cough, hiccough, and pain—and it may be performed as a last resort. The result of a successful "phrenic" is to paralyse the diaphragm which then rises steadily for at least four months to a variable height, occasionally as high as the third rib in the mid-axillary line. The diaphragmatic muscle atrophies. The flaccid diaphragm may have paradoxical movement due to a "push up" by the abdominal viscera as the normal diaphragm descends, but the flaccid diaphragm is always high. Cough is easier and, whichever side is paralysed, there is no interference with the act of defæcation and rarely, if ever, disturbance of stomach function.

I value phrenic avulsion highly and the results have been much better than I anticipated—e.g., 75 per cent. of cavities are affected as against 12 per cent. of sanatorium routine. But I do not resort to the operation in early cases, neither do I think it the method of choice, except for nervous and mentally deficient people who would not face an artificial pneumothorax with equanimity.

THORACOPLASTY.

This is the name that covers a variety of operations for the removal of ribs, so that the underlying lung may be collapsed. The thoracoplasty may be partial or complete according to the number of ribs removed. The good surgeon plans his operation to give the desired collapse. In some cases a few ribs will suffice, in others six or seven, and in others all will have to be resected. I shall not describe any of the operations. A complete thoracoplasty is a serious operation with a 5 per cent. mortality, but tuberculosis is a serious disease, and as the technique of the operation is steadily improving, so the operative mortality is lessening. If all cases were found when early it would mean very few artificial pneumothoraxes and phrenic avulsions and still fewer thoracoplasties. Since, however, patients once early and curable, for one reason or another become advanced something must be done, for we know the fate of the untreated and advanced consumptive.

Thoracoplasty must not be done too early nor yet too late and never as a last resort. Artificial pneumothorax impracticable, phrenic avulsion insufficient, the only alternative *in a suitable case* is a well-planned thoracoplasty and it should not be recommended until then.

The selection of the case demands the greatest discrimination. A patient should usually not exceed 45 years of age and the heart muscle must be irreproachable. The opposite lung should be sound, though a little healed trouble may be ignored. The lung should show definite evidence of fibrosis and the exudative type is unsuitable. I recommend for the operation the patient faced with chronic invalidism, the one with a persistent positive sputum, he who has a thick walled cavity, a spontaneous pneumothorax with a patent opening or a tuberculous empyema. Persistent positive sputum is a danger to the patient and possibly to others. A thick walled cavity may be evidence of chronicity, but it must be collapsed. Tuberculous empyema rarely subsides with irrigation. If resection of ribs becomes necessary let it be done anteriorly, so that the fie is left clear should a thoracoplasty be advised.

Remembering the gravity of the case submitt for thoracoplasty the results are amazing—38 per cen are cured and a further 20 per cent. are alive. England many patients die for the want of a thorac plasty, for too few physicians recommend the operati and too few surgeons undertake it.

THE PECTEN: THE PECTEN BAND PECTENOSIS AND PECTENOTOMY.*

BY A. LAWRENCE ABEL, M.S. LOND., F.R.C.S. ENG

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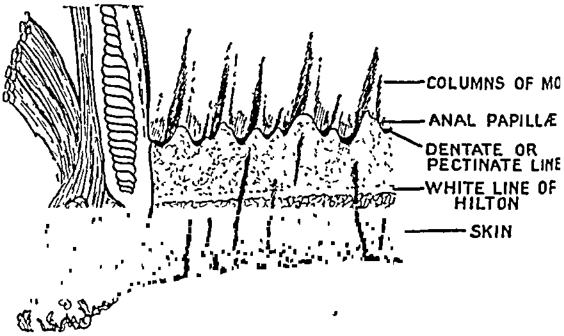
THE "pecten" is the name given by Stroud[1] i 1896 to approximately the middle third of the an canal. The anal canal is the portion of the alimentar canal which leads from the lower end of the rectu to the exterior. It commences in both male an female at the level of the median borders of th levator ani muscles. In the male it is opposite th inferior part of the prostate. In a state of repos the anal canal is a slit-like passageway, kept close by the compression of its upper end by the levator a muscles, and below these by the compression of the internal and external sphincter muscles. During defæcation it becomes oval in shape and shorter. Its normal length is one and a half inches, and its antero-posterior diameter three-fourths of an inch. The direction taken by the anal canal is downwards and slightly backwards in a line drawn from the umbilicus to the anal aperture.

FIG. 1.



INTERIOR ANATOMY OF ANAL CANAL.

When an examination of the interior of the anal canal is made, about half an inch up from the anal verge, a distinct white line is seen (Fig. 1). This was first described by Hilton[2] in 1863, who says:

> "A white line, which in the living subject any surgeon can recognise, shows the junction of the skin and the mucous membrane. That white line corresponds exactly to the lineal interval between the external and internal sphincter muscle. It is an important landmark, exact and truthful, so that it can be relied upon."

Below the level of Hilton's "white line," the anal canal is lined by squamous epithelium, indistinguishable from ordinary skin, and the white line is often referred to as the muco-cutaneous junction.

Immediately above Hilton's white line is an area varying in breadth from one-eighth to one-third of an inch, the colour of which is intermediate between that of the skin and the mucous membrane of the rectum. Stroud has given this zone the name of the "pecten," because arising from its upper edge, like the teeth of a comb (Latin, *pecten*), are the anal papillæ, which are continuous above with the columns of Morgagni, or columnæ rectales. The epithelium covering the columns of Morgagni is of the columnar variety similar to that of the remainder of the intestine. At the bases of the columns of Morgagni on the anal papillæ the columnar epithelium undergoes a change, and becomes transitional stratified epithelium for a distance of about a quarter of an inch, becoming squamous epithelium immediately below Hilton's white line. The bases of the anal papillæ are connected by a number of faintly marked irregular semilunar folds, which are known as the anal valves. These form a number of small pockets, or sinuses, between the vertical columns, and are known as the crypts of Morgagni. In other words the upper two-fifths of the anal canal is occupied by the columns of Morgagni covered by columnar epithelium. Approximately the middle one-fifth is the pecten. In a normal subject this has a glistening appearance, is quite smooth, and is almost entirely devoid of sweat glands. Above it is bounded by the wavy dentate or pectinate line caused by the anal papillæ, and below by Hilton's white line. The lower two-fifths of the anal canal is lined by squamous epithelium.

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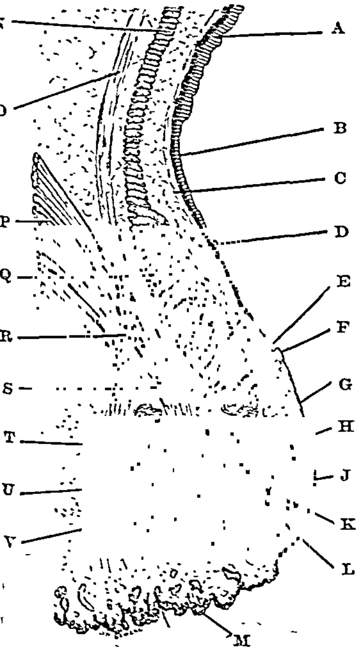
* A paper read before the Subsection of Proctology of the Royal Society of Medicine, on Jan. 13th, 1932.

The importance of this portion of the anal canal may be judged by the statement of Pennington,[3] who estimates that 85 per cent. of all proctological diseases occur in this area.

DEVELOPMENT.

The pecten marks the union of the proctodeum and the hind gut. The part below the pecten is formed by an ectodermal depression named the proctodeum; the part above this line is formed from the hind gut. The part of the hind gut caudal to the allantois is frequently termed the cloaca, and in the early embryo it is separated from the ectoderm by the cloacal membrane. The part of the cloacal membrane which separates the rectum from the ectodermal pouch or proctodeum is known as the anal membrane. During the fourth month of intra-uterine life the anal membrane ruptures and so the rectum and anal canal communicate. Non-perforation of the normally formed anal membrane situated at the level of the pecten constitutes one of the varieties of imperforate anus.

FIG. 2.



A = normal columnar epithelium of rectum. B = columnar epithelium of upper part of anal canal. C = muscularis mucosæ. D = superior hæmorrhoidal plexus. E = anal valve. F = pectinate or dentate line. G = epithelium of pecten. H = white line of Hilton. J = skin of anal canal below Hilton's line. K = gland in external sphincter muscle (a similar gland is seen in the internal sphincter). L = inferior hæmorrhoidal plexus. M = normal skin beyond anal verge, with sweat glands and hair follicles. N = inner circular fibres of bowel wall. O = outer longitudinal fibres of bowel wall. P = levator ani muscle. Q = internal sphincter muscle. R = blending of O and P. S = inner tendon passing between two portions of external sphincter muscle. T = outer tendon passing to outer side of external sphincter. U = inner portion of external sphincter muscle. V = outer portion of external sphincter muscle.

Composite semi-diagrammatic scheme of relations of anal canal from sections kindly lent by Dr. Cuthbert Dukes.

FIG. 3.

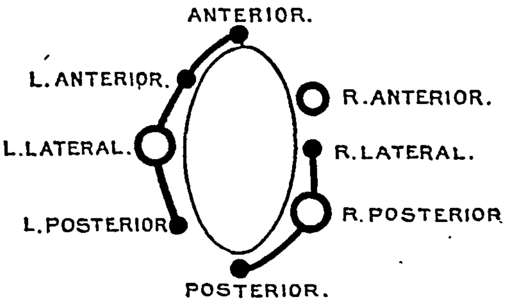


Diagram showing position of arteries in the anal canal. These, together with their venæ comites, form internal piles, as follows: those indicated by large circles (the main vessels) form primary piles; those indicated by small circles form secondary piles.

EXTERNAL RELATIONS.

Immediately to the outer side of the pecten is the slight depression between the internal and external sphincter muscles and the lowest fibres of the internal sphincter (Fig. 2). Below and to the outer side of the pecten can be felt the external sphincter muscle. Above and more laterally the fibres of the levator ani muscle and the outer longitudinal fibres of the bowel wall blend together and pass downwards in two portions: (1) through the external sphincter, dividing it into two portions, superficial and deep; (2) lateral to the muscle forming an external capsule for it.

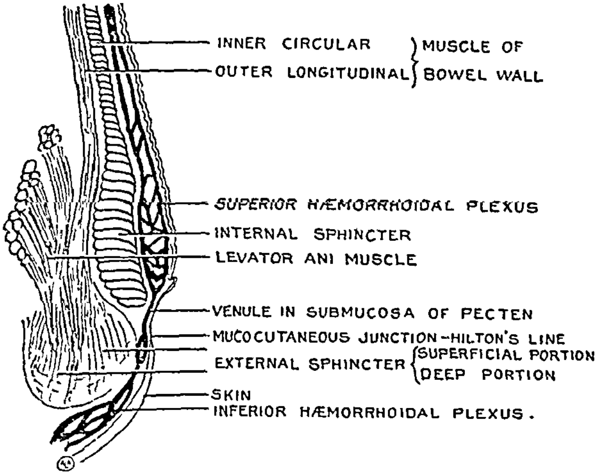
Above the level of the pecten lies the internal sphincter muscle, composed of a thickening of the inner circular layer of fibres of the intestinal wall.

VASCULAR SUPPLY OF THE PECTEN.

Terminal arterioles and capillaries of the superior, middle, and inferior hæmorrhoidal arteries reach the submucosa of the pecten (Fig. 3). Accompanying these are their corresponding venæ comites. The superior hæmorrhoidal arteries and veins are the most important because of their relation to internal hæmorrhoids, and because they occupy constant positions in relation to the circumference of the anal canal. From the superior hæmorrhoidal artery arise two primary branches, a right and a left. The right branch penetrates the muscular coat, and after entering the submucous tissue divides into an anterior and a posterior branch. The anterior branch passes downwards in the right anterior quadrant of the rectum, and never gives off any further branches. The posterior branch passes downwards in the right posterior quadrant and on its way gives off two branches: an anterior, which runs down in the middle of the right side of the anal canal, and a posterior, which passes downwards in the midline posteriorly. On the left side the artery after piercing the muscular coat, passes downwards in the middle of the left side of the anal canal. It remains single until near its termination, when it gives off two branches, an anterior, running downwards in the middle of the left anterior quadrant, and a posterior, running in the middle of the left posterior quadrant. Very rarely the left anterior branch of the left branch of the superior hæmorrhoidal artery gives off a further branch which lies in the anterior portion of the anal canal. The main branches of the superior hæmorrhoidal artery, together with their accompanying venæ comites and venous plexuses, take part in the formation of what are called primary hæmorrhoids, which are therefore situated in the right anterior, right posterior, and left lateral aspects of the anal canal.

Branches of these main branches give rise to the secondary hæmorrhoids—namely, from the right posterior artery; right lateral and posterior secondary hæmorrhoids; from the left lateral; left anterior, left posterior, and very rarely anterior secondary hæmorrhoids. No secondary hæmorrhoids arise from the right anterior main branch.

FIG. 4.


INNER CIRCULAR } MUSCLE OF
OUTER LONGITUDINAL } BOWEL WALL
SUPERIOR HÆMORRHOIDAL PLEXUS
INTERNAL SPHINCTER
LEVATOR ANI MUSCLE
VENULE IN SUBMUCOSA OF PECTEN
MUCOCUTANEOUS JUNCTION-HILTON'S LINE
EXTERNAL SPHINCTER { SUPERFICIAL PORTION
DEEP PORTION
SKIN
INFERIOR HÆMORRHOIDAL PLEXUS.

Thus if all possible hæmorrhoids are developed the pecten marks the lower limit of three primary and five secondary hæmorrhoids.

The pecten also marks the dividing line between the superior hæmorrhoidal vessels above, and the inferior hæmorrhoidal vessels below (Fig. 4). That is to say, the small vessels in the submucosa of the pecten communicate with both the portal and systemic circulations.

Intero-external piles are a varicose condition of both superior and inferior hæmorrhoidal plexuses united together by a varicose condition of the communicating veins in the submucosa of the pecten.

Below the level of the pecten lies a venous ring, the inferior hæmorrhoidal plexus, which is formed by numerous small vessels arising from the submucocutaneous tissue, situated at the level of Hilton's white line. The majority of these twigs pass superficial to the external sphincter while others pass between its superficial and deep portions. Running beneath the mucous membrane of the pecten are a number of small veins which form the communication between the superior and inferior hæmorrhoidal plexuses. These small veins are apt to become dilated by constant straining, and when one is ruptured it forms the so-called ruptured external pile, often erroneously called the thrombotic pile, the more modern term for which is "hæmatoma ani." If suppuration occurs in one of these veins, a fistulous track may be formed which may be either entirely internal to the external sphincter, or may lie between its superficial and deep portions. The middle hæmorrhoidal plexus of veins lies on the outer surface of the rectum immediately above the levator ani muscle. A few small vessels from the superior hæmorrhoidal plexus communicate with the middle hæmorrhoidal plexus through the internal sphincter muscle.

NERVE-SUPPLY OF THE PECTEN.

The pecten is also the dividing line between the cerebro-spinal and sympathetic nerve-supply of the anal canal and rectum. The pecten and the anus are supplied by means of cerebro-spinal nerves from the third, fourth, and fifth sacral nerve. A large proportion of the terminations of these nerves end in the anal papillæ of the pecten. These papillæ, which are peculiar to man, consist chiefly of nerve-fibres and ganglion cells. Most observers consider that these papillæ constitute an accessory sense organ of a higher degree of development than the rest of the pecten. The whole of this area is very sensitive to pain.

Above the region of the pecten the anus and rectum are supplied through the sympathetic nerves in a manner similar to that of the rest of the intestine, and sensation to pain is almost entirely absent.

LYMPHATICS OF THE PECTEN.

The pecten is also the dividing line between the somatic and visceral lymphatics. Distal to the pecten the lymphatics drain into the inguinal nodes, while proximally they drain into the sacral and lumbar lymph nodes.

The lymphatics from the pecten form a plexus situated in the submucous plane and in the intermuscular plane. Efferents from these communicate with three groups: (1) the lymph sinus of the rectum, situated outside the external muscular coat of the rectum; (2) the subcutaneous peri-anal lymphatics, efferents of which pass either immediately beneath the skin or between the superficial and deep portions of the external sphincter muscle; (3) directly laterally between the two sphincters, through the fatty tissue of the ischio-rectal fossa to reach Alcock's canal.

This leads me to mention the types of fistulæ, the internal openings of which are situated in the pecten. The internal opening of a blind internal subcutaneous fistula is situated at the lower edge of a fissure, which lies as a rule on Hilton's white line. The same is true of the internal opening of a complete subcutaneous fistula. A blind internal submucous fistula has its internal opening in the pecten, as does also a bilateral submucous fistula. The blind internal intramuscular ano-rectal fistula also has its internal opening about a quarter of an inch above Hilton's white line. All blind internal and complete subsphincteric fistulæ, and blind internal and complete ischio-rectal fistulæ, have their internal openings in the pecten.

FOCAL INFECTION.

The anal crypts of Morgagni, which form part of the pecten, form little saccules in which bacteria and small foreign bodies may lodge. Here also open the mouths of the submucous and intermuscular glands described by H. A. Harris[4] and Sir Charles Gordon-Watson. Irritation in the region of the pecten causes tenesmus and neuralgia of the rectum. It is customary to classify diseases proximal to the pecten as "visceral diseases," and those distal as "perineal." Pennington believes that in this area toxins may be given off from the lodged bacteria, and disturbances of reflexes originate at this level, and perverted function of the intestine may also be initiated. He also points out that diseases peculiar to the epidermis occur distal to the pecten but not on the proximal side. Diseases peculiar to the mucosa are found only on its proximal side.

The pecten also marks the proximal boundary of pruritus ani, and is the dividing line between external and internal hæmorrhoids. Infection in this region may travel either via the portal or the systemic, or both, venous systems.

THE SPHINCTERS.

The two sphincters of the anal canal are true sphincters, and the act of defæcation is performed mainly under the influence of the parasympathetic portion of the autonomic nervous system. Stimulation of this produces effects directly the reverse of those resulting from stimulation of the sympathetic portion. The physiological processes which take place on sympathetic stimulation are an inhibition of peristalsis and spasmodic contraction of both the sphincters of the anus.

Throughout the animal world these occur during muscular exercise, especially during the search for food and in mortal combat; and in human beings at times of mental concentration, especially when accompanied by worry or grief. The parasympathetic nervous system, on the other hand, should come into play at a time of both physical and mental repose, when the function of the sympathetic portion is relatively in abeyance. The effect of the ingestion of food into the stomach causes a gastro-colic reflex which normally only takes place once a day immediately the first meal of the day is ingested. This originates active peristalsis of the large intestine, and relaxation is brought about, first by the direct action of the longitudinal fibres, and secondly by a diminution of the tone of the sphincters, an inhibitory reflex caused by the peristalsis of the whole colon. This reflex arch may be disturbed either on the side of the parasympathetic system, or more commonly on its sympathetic portion, or by a central, cerebral, or psychic effect acting upon either or both.

Hilton says:

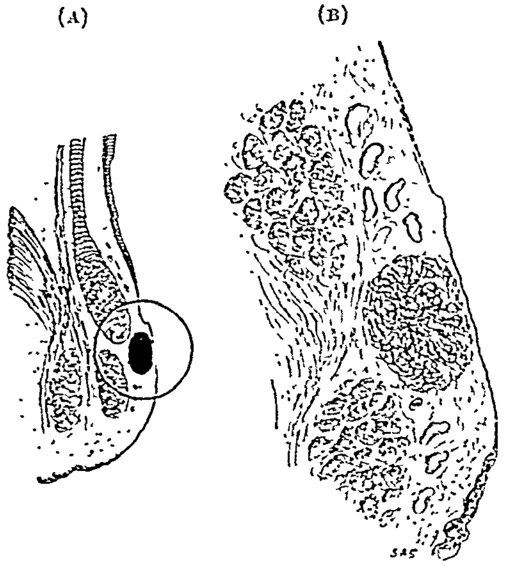
> "Who is there that has not felt this kind of competitive struggle, this intestinal warfare going on within himself, fearing the issue and has not been thankful for the result, and full of gratitude for the enduring strength of the little indomitable sphincter, which has averted the possible catastrophe?"

THE "PECTEN BAND."

The anal sphincters, in common with the other sphincters of the alimentary canal, not only have the power of maintaining their normal tone, and exhibit the function of relaxation due to inhibitory reflexes, but can also be thrown into a state of hypertonus or spasm. Sphincteric tissue is an area where normal or excessive tone can be maintained indefinitely without the muscle at this level becoming hypertrophied, and it is the musculature proximal to it which hypertrophies if the sphincter is in a state of hypertonus, that is, a state of spasm. It would appear that sphincters which are under the control of the will pass into a state of spasm more readily than those which are not under the control of the will, and that spasm occurring in voluntary sphincters is apt to be of a more prolonged nature, and to be followed by more serious results than spasm of an involuntary sphincter. I refer especially, of course, to the crico-pharyngeus muscle, the superior sphincter of the œsophagus, and to the external sphincter of the anus.

Hypertonicity or spasm occurring in the alimentary canal produces a local passive congestion which ultimately results in fibrous induration. It has been already pointed out that the tributaries of the superior and inferior hæmorrhoidal veins arise from a minute capillary plexus situated in the submucous tissue of the pecten. When the flow of blood from this minute plexus is obstructed, either by a spasm of the external or internal sphincter or both, the plexus becomes the seat of passive congestion. This results in a deposition of fibrous tissue taking place in the submucous tissue of the pecten. Quite apart from spasm of the sphincters, we know that varicose veins in any situation may lead to passive congestion in the tissues from whence they arise. This ultimately results in the deposition of fibrous tissue, following a round-celled infiltration. Evidence of such induration, as a sequel to passive congestion, is well exemplified in the case of the indurated zone in the neighbourhood of a varicose ulcer of the leg. A similar deposition of fibrous tissue occurs after a varying amount of time in subjects who have internal hæmorrhoids (Fig. 5). Occurring in the anal canal, this condition was first described by W. E. Miles [5] in the following terms:

FIG. 5.



(A) Section through anal canal showing pecten band in relation to normal structures. (B) Microscopical view of portion of A enclosed by circle. Note: above and below, fibres of internal and external sphincter muscles respectively; right centre, organised fibrous tissue forming pecten band; above and below this, veins of superior and inferior hæmorrhoidal plexuses respectively.

> "The fibrous deposit takes the form of a circular band varying in thickness and density, completely surrounding the lower part of the anal canal, and situated between the mucous membrane of the pecten and the external sphincter muscle. In well-marked instances the band of fibrous tissue can be distinctly felt, and gives an impression to the examining finger such as would be obtained if a rubber umbrella ring had been inserted beneath the skin at the anal margin. I have named this deposit of fibrous tissue in the submucosa of the pecten 'the pecten band.' The pecten band does not exist in the healthy anal canal. It is purely pathological in origin."

I have elsewhere [6] called attention to an exactly similar deposit of fibrous tissue, which occurs at the level of the crico-pharyngeus muscle, in cases of long-standing so-called globus hystericus, as a result of the passive congestion produced by long-continued spasm of the crico-pharyngeal sphincter. It was first described in 1918 by Dan McKenzie,[7] and has been described by many surgeons since. It diminishes the expansibility of the gullet, and gives rise to painless dysphagia, which is, or may have been for many months, a precursor of a hypopharyngeal neoplasm. A very similar condition occurs at the cardiac sphincter in cases of cardiospasm, and as the cardiac sphincter is from one to one and a half inches in length, a definite band is seldom found but considerable fibrosis occurs in the wall of the œsophagus opposite the whole length of the cardiac sphincter. The condition occurring in the post-cricoid region is known as post-cricoid spasmodic stricture, and is frequently followed by marked anæmia and splenomegaly.

A similar analogy might be drawn between the spasmodic hour-glass stomach, situated opposite a gastric ulcer, which subsequently becomes an organic hour-glass stomach, due to the deposition of dense fibrous tissue as a result of a long-continued spasm and consequent passive congestion.

RELATION OF THE PECTEN BAND TO RECTAL PATHOLOGY.

Passive congestion in the region of the pecten may be brought about by a number of factors. Probably the commonest is the varicosities of the superior hæmorrhoidal veins. Constipation alone without the presence of hæmorrhoids has an exactly similar effect, as has also spasm of the sphincter muscles. With the passage of months and years the pecten band becomes more and more dense, and prevents the proper relaxation of the sphincters. There is then difficulty in obtaining complete emptying of the rectum, the size of the calibre of the fæces is diminished, and the lower half of the anal canal tends to be held immobile, while the elevating effect of the pubo-coccygeal part of the levator ani muscle has the effect of pulling the internal away from the external sphincter, thereby causing sometimes as much as an inch of separation between the two sphincters, and still further increasing the difficulty in obtaining complete emptying of the rectum during defæcation. The tighter the anal aperture becomes, the greater the straining at stool; hence any hæmorrhoidal condition tends to be aggravated, and if the piles become prolapsed through the anal orifice they are apt to become strangulated by the non-yielding pecten band. As a result of this deposit of fibrous tissue in the submucosa of the pecten, the mucous membrane of this region, instead of being freely movable over the subjacent tissues, becomes anchored to it and poorly nourished with blood. This renders it much more easily damaged than in a normal subject. It is uncommon to find a fissure in a patient without a pre-existing pecten band. If the anus is everted in a patient suffering from fissure definite white strands of fibrous tissue can be discerned running circularly around the anal canal at the bottom of the fissure; and if a portion of this tissue is taken for microscopical section it will be found to consist of fibrous tissue only.

We have noticed how the post-cricoid spasmodic stricture produces, after a considerable time, a thin and atrophic mucous membrane in the pharynx, and may eventually lead to malignant disease. The mucous membrane of the rectum frequently becomes unhealthy in patients with long-standing pectenosis; secretion of normal rectal mucus is apt to become excessive, and the patient suffers from pruritus ani. When no other pathological condition exists in the rectum, pruritus of these patients may be cured by performing the operation of pectenotomy. It is interesting to speculate that sometimes the pecten band may be responsible for the development of carcinoma in the altered mucous membrane of the rectum. Cracks or fissures in the region of the pecten are by far the commonest portal of entry of micro-organisms into the lymphatics and veins of the anal canal, and thence to the tissues around the anus, giving rise to ano-rectal abscesses and fistulæ. A careful examination of many of these cases reveals not only the internal opening in the pecten, but also a definite pecten band in the same region, and there is no doubt that pectenosis is the most frequent precursor of ano-rectal fistulæ.

The pecten band may exist to a marked degree without any other pathological condition being found in the rectum or anal canal. When this condition is allowed to progress, the anus may become almost completely closed. I have seen three cases of typical acute intestinal obstruction, which were produced by a severe pectenosis, and which were entirely cured by the operation of pectenotomy. Many years must elapse before the pecten band contracts to such an extreme degree. Two of these patients were over 70 years of age, and one was a man of 80.

PECTENOTOMY.

The old-fashioned procedure of stretching the sphincters produces a rupture of the fibres of the pecten band in many places, usually with multiple areas of extravasation of blood amongst these fibres, and consequently the further formation of fibrous tissue, and ultimately a thicker and denser pecten band results. This, however, is not always the case, for if little hæmorrhage occurs, complete relaxation of the sphincters is obtained, a normal functioning of the anal canal may be instituted, and the fibrous deposit may be reabsorbed.

A much more satisfactory and certain method is to make a clean incision through the pecten band. No hidden areas of hæmorrhage are left to fibrose and contract; the sphincters are restored to their full powers of relaxation; the interval is filled in by thin granulations, and within a short time the whole of the pecten band is reabsorbed, and a healthy mucosa of the pecten results. For this reason pectenotomy is preferred to so-called stretching of the sphincters, and in attempting the cure of a fissure division of the external sphincter muscle is never necessary, except in very long-standing cases, when the fibrosis has extended, not only to the submucosa of the pecten, but also into the substance of the external sphincter muscle, as it sometimes does. Should it be necessary to cut the external sphincter no impairment of control results.

The operation of pectenotomy is usually performed with the patient lying in the right lateral position. The index-finger of the left hand is inserted into the anal canal without lubricant. The right posterior quadrant of the anal canal is everted. A little to the right of the midline an incision is made parallel to the long axis of the bowel, the upper end being situated half an inch above Hilton's white line, and its lower end a short distance below this line. Immediately the mucous membrane and skin have been divided, the white fibres of the pecten band come into view, at the upper end of the wound, and the reddish-brown fibres of the external sphincter may just be seen at the lower end of the wound. The latter are carefully avoided, and the incision is carried deeper until the complete thickness of the dense fibres of the pecten band is divided. Immediately this is done the anus is found to be relaxed, in common with the other muscles affected by the general anæsthetic, and two or three fingers can easily be passed into the anus, whereas before the pectenotomy, great difficulty may have been experienced in even passing the index-finger.

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THE
ACTIVE PRINCIPLE IN HOG'S STOMACH EFFECTIVE IN PERNICIOUS ANÆMIA.

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The value of hog's stomach in the treatment of pernicious anæmia has been amply demonstrated during the last two and a half years by workers in many countries.[1] [2] There is, however, little resemblance to the corresponding liver therapy so far as the active principles involved are concerned. From liver palatable and concentrated extracts are readily obtained,[3] but similar preparations have failed in our hands with stomach tissue, and this observation has been confirmed by Meulengracht.[4]

In the course of early experiments on raw stomach during 1929 it soon became apparent to us that certain essential conditions were necessary for the production of active stomach preparations. These were such as one would expect to obtain if the activity were due to a substance which was relatively unstable, and similar in this and possibly other respects to enzymes. From an entirely different viewpoint, an examination of the behaviour of normal gastric juice under varying conditions [2] [5] gave rise to a similar idea with regard to the active principle which Castle terms the "intrinsic factor" present in human gastric secretions. In the present paper we are concerned with the investigation of the active principle present in hog's stomach.

It will suffice here to mention that in our early experiments several procedures were found to yield inactive stomach extracts. Of these the following may be mentioned:—

1. Exposure to a temperature of more than 45° C. at any stage.
2. Autolysis, especially in the presence of free hydrochloric acid, for a greater or less number of hours, depending upon the temperature.
3. Prolonged digestion with pepsin and hydrochloric acid, or trypsin, under most conditions.

It was appreciated at the outset that whatever its constitution the active substance would be present in relatively small quantities, and large bulks of raw material would require to be worked up if any success was to be achieved in isolating it.

It is not proposed to describe here all the various methods of extraction that were tried, but the main ones will be indicated. As each step in the experiments has furnished fractions, they have been administered to suitable cases of pernicious anæmia for control as to their hæmopoietic activities. The cases used for this purpose were all carefully chosen according to the rigid criteria already laid down,[6] and this has of necessity made progress slow.

EXTRACTS OF DESICCATED HOG'S STOMACH.

Large-scale experiments were tried first with the desiccated hog's stomach, since it was more easily handled than the fresh organ.

1. Dilute hydrochloric acid at different pH values, with and without the addition of pepsin or glycerin, failed to furnish a solution that would initiate remissions in cases of pernicious anæmia. On the other hand, the solid residues when separated and desiccated were still active.
2. The use of organic solvents likewise failed to furnish any active extracts. Thus 4·5 kg. of desiccated stomach lost about 10 per cent. of its weight after ether extraction. The ethereal extract consisted of hæmopoietically inactive fat. Subsequent extraction with varying strengths (60–70 per cent.) of ethyl alcohol removed less than 10 g. of sparingly soluble, lipoidal solid (m.p. 175–185° C.), and furnished an inactive thick, yellowish-brown fluid; both were hæmopoietically inactive. The residual stomach powder was still as active as the original powder even after seven months of continuous extraction with cold dilute alcohol (60–70 per cent.). Other organic solvents similarly failed.
3. The direct treatment of the desiccated stomach powder with such reagents as phosphotungstic acid and picric acid likewise did not furnish a clinically active product.

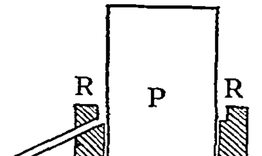
EXTRACTS OF FRESH STOMACH.*

Various methods of extracting the fresh tissue were investigated using water, dilute hydrochloric acid of various strengths, and glycerin. The following are brief details of an illustrative experiment.

Fresh minced hog's stomachs (367 kg.) were extracted three times with 660 litres of water adjusted to pH 4·6 by the addition of hydrochloric acid. The resulting liquor was concentrated at 40–45° C. in vacuo, made alkaline with caustic soda, treated with basic lead acetate to remove proteins, and the excess of lead removed with sulphuric acid. After concentration, 17 litres of a reddish-brown extract were obtained. No hæmopoietically active fractions were isolated from these extracts. On the other hand, the semi-solid residues were desiccated and shown to be still active. Subsidiary fractionations were also tried employing picric acid, phosphotungstic acid, mercuric chloride, whilst autolysis of the mucous membrane under varying conditions failed to give any more favourable results. Thus in one experiment, the product of the autolysis of the tissue at 45° C. in the presence of hydrochloric acid did not initiate a remission in a case of pernicious anæmia after the daily administration of 300 c.cm. of the autolysate for three weeks.

EXPRESSED STOMACH JUICE.

The complete failure of all these and other undescribed methods to furnish an active extract suggested to us the possibility that the active principle might be of the nature of an intracellular enzyme. Consequently, attention was directed to the method used by Büchner [7] for the preparation of the enzyme zymase from yeast—namely, expression of the juice from the disintegrated cells by the application of great pressure. In our earlier experiments, an ordinary hand press was used, but the yield of expressed juice obtained in this way from minced hog's stomach was very small, and a number of other difficulties were experienced rendering the method of little use, while the juice so obtained was hæmopoietically inactive when tested clinically. A special apparatus, therefore, was constructed, capable of withstanding considerable pressure, applied by means of a tensile and compressive testing machine in the Engineering Department of the University. It consists essentially (see Figure) of:—



(*a*) A cylinder C of cast iron, of which the upper part is provided with a recess R and an exit tube E.1. The lower end of the cylinder wall is provided with radial and circular grooves.

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* The raw material for the experiments in this group was kindly supplied by Benger's Food, Ltd., Manchester, and some extracted in part by Dr. Bullock for us.

(*b*) A base plate B of cast iron having a recess into which the cylinder is securely bolted. It is provided with an exit tube, E.2.

(*c*) An iron plate, L, perforated with very fine holes, and having radial and circular grooves cut out of its lower surface. These grooves and also those at the lower end of the cylinder C enable liquid to flow away easily. The plate L fits tightly in the lower end of the cylinder C.

(*d*) A steel piston P.

The finely minced fresh stomach tissue was thoroughly mixed with an equal weight of Calais sand, ground in a special mill to the correct consistency, and the soft "dough" then subjected to a pressure of approximately 2½–3 tons per square inch in the above apparatus until no further liquid could be obtained. Under these conditions we were able to collect good yields of the expressed juice; thus, for example, in a series of experiments the yield of juice was between 558 and 669 c.cm. per 1000 g. of fresh tissue.

Properties.—The expressed juice is a reddish, opalescent, rather viscid liquid containing a small amount of suspended matter which can be removed by filtration through cloth. It decomposes rapidly within 24 hours at ordinary temperatures, but keeps fairly well in a refrigerator for about five days.

The juice is distinctly acid towards litmus and has a pH of approximately 6·0. It coagulates with heat owing to the presence of proteins. It has a good pepsin content, but contains no rennin, amylase, lipase, or urease. The following protein tests were positive: biuret, Molisch, lead acetate sulphur test, Millon, Pauly, Adamkiewicz, p.-dimethylaminobenzaldehyde, ninhydrin, Sakaguchi, Folin phenol test, xanthoproteic. Precipitates were obtained with the usual protein precipitants (alcohol, acetone, phosphotungstic acid, picric acid, trichloracetic acid, metaphosphoric acid, tannic acid, and lead acetate).

This juice was shown to be very active in the treatment of pernicious anæmia in three cases after a daily dose of 150 c.cm. Thus in two cases the reticulocytes rose to 16·2 and 24·5 per cent. respectively on the ninth day after a preliminary control period of seven days; a third case showed an increase in reticulocytes, but the treatment was discontinued owing to nausea and other therapy was instituted.

CASE 206.—Maximum reticulocyte response, 16·2 per cent. on the ninth day of treatment. First day of treatment: red cells (R.B.C.), 1,700,000; hæmoglobin (Hb.), 46 per cent.; white cells (W.B.C.), 1800. Twenty-fifth day of treatment: R.B.C., 3,250,000; Hb., 84 per cent.; W.B.C., 5300.

CASE 207.—Maximum reticulocyte response, 24·5 per cent. on the ninth day of treatment. First day of treatment: R.B.C., 1,400,000; Hb., 36 per cent.; W.B.C., 3200. Thirty-fourth day of treatment: R.B.C., 3,600,000; Hb., 78 per cent.; W.B.C., 7600.

FRACTIONATION OF EXPRESSED JUICE.

The expressed juice described above having been proved active was subjected to further fractionation. Precipitation by adding 1 volume of juice to 5 volumes of 90 per cent. alcohol furnished a copious precipitate (P5) and an alcoholic filtrate; the usual yield of solid, P5, was 15–18 g. per 500 c.cm. of juice, 1 g. thus being derived from approximately 50 g. of fresh whole stomach tissue.

Properties of precipitate P5.—This light, cream-coloured powder was only partially soluble in water. The peptic activity showed that it contained approximately all the pepsin in the original expressed juice; rennin, amylase, urease, and lipase were absent. Nitrogen, phosphorus, traces of iron, calcium, and sodium were present, it contained 13·5 per cent. total nitrogen, and gave positive results with all the protein reagents mentioned above.

The administration of this powder to two cases of pernicious anæmia showed that it possessed considerable hæmopoietic activity; thus in Case 215 the reticulocytes gave a "peak" of 19·4 per cent. on the ninth day, while the red blood-cells and hæmoglobin showed rapid increases.

Alcoholic filtrate from P5.—The combined alcoholic filtrates (A1–O1) were concentrated in vacuo at low temperature giving 164 g. of a yellowish-brown semi-solid mass, B5—representing 16 kg. of original fresh tissue. It was almost completely soluble in water, had no peptic activity, and contained 5·9 per cent. of total nitrogen. Of the reactions for proteins mentioned above only positive results were given with the Molisch, Folin phenol, Pauly, ninhydrin, and xanthoproteic tests. The usual protein precipitants, except phosphotungstic acid, likewise gave no precipitates.

This material (B5) was administered to two patients with pernicious anæmia in doses of 5 g. (equivalent to about 500 g. of fresh tissue) daily for 14 days without any responses.

Further fractionations of the solid P5 have been made, but have not yet been adequately examined clinically for their hæmopoietic activities.

CONCLUSIONS.

The experiments described in this paper appear to show that the active principles in liver and in hog's stomach effective in pernicious anæmia are not identical. The nature of the active principle in liver is, it is true, not finally settled, since West and Howe,[8] who first regarded it as a compound of β-hydroxyglutamic acid and γ-hydroxyproline, have now [9] withdrawn from their original position. Cohn and his co-workers [3] have, however, shown that the liver active principle is neither protein, lipoid, nor carbohydrate, but is either a nitrogenous base or a polypeptide. Our experiments render it highly probable that the active principle in hog's stomach effective in pernicious anæmia may be of an enzyme-like nature as has already been suggested,[2, 5] and consequently different from that present in liver. The evidence in favour of this conclusion can be summarised as follows:—

(*a*) We have been unable to extract the active principle from hog's stomach by methods which readily yield active extracts when applied to liver. This firmness of attachment of the active principle to the stomach tissue is in harmony with the readiness with which enzymes are adsorbed by proteins. It should be mentioned, however, that Gänsslen [10] has described the parenteral use of a preparation of stomach, but no details are available.

(*b*) The only method which has so far given an active stomach extract in our hands is the one which Büchner used to obtain the enzyme zymase from yeast—namely, expression of the juice from the cells by the application of great pressure.

(*c*) When the expressed stomach juice is treated with excess of alcohol a precipitate is obtained which is active in the treatment of pernicious anæmia. This precipitate, in common with desiccated hog's stomach and expressed juice, gives all the usual protein reactions. The alcohol filtrate from this precipitate, however, furnishes on concentration a solid which does not give many of the protein reactions, and is inactive in the treatment of pernicious anæmia. It appears probable that the active principle of stomach is either a protein-like material or else a substance which is associated with or easily adsorbed by proteins, such as an enzyme.

(*d*) Below about 45° C. most enzyme solutions are comparatively stable, but above this temperature inactivation soon commences, until at about 70–80° C. they are very rapidly destroyed. Now, according to Cohn, the active principle in liver is fairly stable towards heat, and even prolonged concentration of its solutions at 60° C. in vacuo does not destroy it. On the other hand, we find that active stomach preparations quickly lose their activities when heated above 45° C. The fact that the activity of stomach is much more easily impaired by heat than is the case with liver is in harmony with the hypothesis that the active principle in stomach effective in pernicious anæmia is of an "enzyme" nature.

(*c*) Castle[5] has demonstrated that the administration of the proteins of beef muscle, predigested in vitro with normal human gastric juice, induced remissions in cases of pernicious anæmia, though he was unable to get responses with gastric juice when given alone between meals in the absence of protein food.

One of us (J. F. W.), however, has shown that when normal human gastric juice is *given at meal times with protein food* to patients suffering from pernicious anæmia, a reticulocyte response does occur. This procedure was not followed by other workers when they failed to get responses with normal gastric juice.

In view of these facts and of the almost invariable association of pernicious anæmia with deficient enzyme secretion there seems to be good reason for believing that an important factor in pernicious anæmia is the failure of the stomach to secrete an essential substance of an enzyme-like character. This substance is neither pepsin, rennin, nor present in the intestinal juices, since they do not relieve the disease. It is not unreasonable to suppose that this unidentified substance acts on the protein present in a normal diet to produce the active "liver principle," which is most probably stored in the liver until it is required; it is not found in spleen, pancreas, intestine, or bone-marrow, and its presence in kidney may be due to an attempt to excrete any excess from the body.

For convenience we propose to apply the term "hæmopoietin" to this as yet unidentified active principle of hog's stomach; a more suitable name may be substituted if it is definitely proved to be an enzyme. Hæmopoietin may be identified with or allied to Castle's "intrinsic factor" of normal human gastric juice. The superior potency of stomach tissue may be readily accounted for by considering the presence of both (*a*) hæmopoietin, and (*b*) small quantities of the "liver principle" produced by the interaction (post mortem) of hæmopoietin on the stomach protein, which thus acts as the substrate or "extrinsic factor" of Castle.

If we are correct in our assumption that the active principle in hog's stomach is of the nature of an enzyme that can only act normally upon protein food introduced into the human stomach, it appears improbable that parenteral stomach preparations will be of much value; any potency that they may exhibit after parenteral injection being then due to the already formed active "liver principle." This would account for the results reported by Gänsslen who used intramuscular doses equivalent to 4 g. of mucosa—no details are given as to the preparation used, but the dose appears to be extremely small, and further reports on it are awaited with interest.

SUMMARY.

1. We have been unable to obtain stomach extracts that are hæmopoietically active for the treatment of pernicious anæmia by the usual methods which, when applied to liver, yield active extracts.

2. A method is described of obtaining active stomach extracts which involves the subjection of stomach tissue to high pressure in a special apparatus.

3. Experiments on the fractionation of this active extract have been described, and it is found that the use of alcohol readily separates a precipitate which is active in the treatment of pernicious anæmia whilst, on the other hand, the filtrate is inactive.

4. Further experiments on the concentration of this active fraction are in progress.

5. Some evidence showing that the active principle in hog's stomach is not identical with that present in liver is discussed.

6. It is considered that these experiments support the clinically suggested view that the active principle in hog's stomach effective in pernicious anæmia is of an enzyme-like nature. The suggestion is made that this "enzyme" acting on the proteins in a normal diet may produce a substance which is stored as the active principle in liver until it is required for hæmopoietic regeneration.

7. For convenience it is proposed temporarily to term this substance in hog's stomach "hæmopoietin."

We wish to acknowledge the valuable coöperation during the progress of these investigations of Prof. H. S. Raper, F.R.S., for his advice and criticisms; the honorary physicians and assistant clinical pathologists of the Manchester Royal Infirmary, and Dr. K. Bullock; Prof. Gibson and Mr. H. W. Baker, of the Department of Engineering of the University; and Mr. James Grier, for kindly allowing us to use the large-scale apparatus in the Pharmaceutical Department of the University.

Finally, we would thank the Medical Research Council, London, for a grant which has enabled one of us (L. K.) to take part in this work.

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THE DIAGNOSIS OF DISEASES OF THE HIP-JOINT.*

BY JAMES F. BRAILSFORD, M.D. BIRM.,
HONORARY ASSISTANT RADIOLOGIST TO THE QUEEN'S HOSPITAL, BIRMINGHAM.

FOR the past five years I have made a study of the patients sent for X ray examination of the hip-joint to the Royal Cripples Hospitals, the Warwickshire Orthopædic Hospital, the Queen's Hospital, the City of Birmingham infant welfare centres, the pensions hospitals, and to my own private practice. The earlier work was done in conjunction with that on lumbo-sacral deformities reported to the Medical Society of London in 1928.[1] The following is a list of the conditions met with.

In persons under 20.

Congenital dislocation of the hip-joint	88	Syphilis	4
Tubercle	60	Tumours	4
Perthes disease	33	Fracture of femur neck	3
Septic arthritis	27	Dislocation of hip-joint	3
Slipped epiphysis of femur	26	Myositis ossificans	3
Infantile coxa vara	15	Osteochondystrophy	3
Rachitic coxa vara	15	Cyst in femur neck	2
		Hæmophiliac changes	1

In persons over 20.

Osteo-arthritis	130	Secondary carcinoma	8
Chronic arthritis	73	Sarcoma	3
Septic arthritis	30	Cyst of femur neck	2
Fracture of femur neck	30	Syphilis	2
Paget's disease	12	Charcot's disease	1
Dislocation of hip-joint	10	Hydatid	1

CONCLUSIONS.

I have been led to draw the following conclusions.

Except in the case of acute disease, the diagnosis of hip-joint disease is almost entirely dependent upon end of the cylinder wall is provided with radial and circular grooves.

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* Opening a discussion at the Medical Society of London on March 21st.

[1] See THE LANCET, 1928, ii., 1241.

(b) A base plate B of cast iron having a recess into which the cylinder is securely bolted. It is provided with an exit tube, E.2.

(c) An iron plate, L, perforated with very fine holes, and having radial and circular grooves cut out of its lower surface. These grooves and also those at the lower end of the cylinder C enable liquid to flow away easily. The plate L fits tightly in the lower end of the cylinder C.

(d) A steel piston P.

The finely minced fresh stomach tissue was thoroughly mixed with an equal weight of Calais sand, ground in a special mill to the correct consistency, and the soft "dough" then subjected to a pressure of approximately 2½–3 tons per square inch in the above apparatus until no further liquid could be obtained. Under these conditions we were able to collect good yields of the expressed juice; thus, for example, in a series of experiments the yield of juice was between 558 and 669 c.cm. per 1000 g. of fresh tissue.

Properties.—The expressed juice is a reddish, opalescent, rather viscid liquid containing a small amount of suspended matter which can be removed by filtration through cloth. It decomposes rapidly within 24 hours at ordinary temperatures, but keeps fairly well in a refrigerator for about five days.

The juice is distinctly acid towards litmus and has a pH of approximately 6·0. It coagulates with heat owing to the presence of proteins. It has a good pepsin content, but contains no rennin, amylase, lipase, or urease. The following protein tests were positive: biuret, Molisch, lead acetate sulphur test, Millon, Pauly, Adamkiewicz, p.-dimethylaminobenzaldehyde, ninhydrin, Sakaguchi, Folin phenol test, xanthoproteic. Precipitates were obtained with the usual protein precipitants (alcohol, acetone, phosphotungstic acid, picric acid, trichloracetic acid, metaphosphoric acid, tannic acid, and lead acetate).

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CONCLUSIONS.

The experiments described in this paper appear to show that the active principles in liver and in hog's stomach effective in pernicious anæmia are not identical. The nature of the active principle in liver is, it is true, not finally settled, since West and Howe,[8] who first regarded it as a compound of β-hydroxyglutamic acid and γ-hydroxyproline, have now [9] withdrawn from their original position. Cohn and his co-workers [3] have, however, shown that the liver active principle is neither protein, lipoid, nor carbohydrate, but is either a nitrogenous base or a polypeptide. Our experiments render it highly probable that the active principle in hog's stomach effective in pernicious anæmia may be of an enzyme-like nature as has already been suggested,[2, 5] and consequently different from that present in liver. The evidence in favour of this conclusion can be summarised as follows:—

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(b) The only method which has so far given an active stomach extract in our hands is the one which Büchner used to obtain the enzyme zymase from yeast—namely, expression of the juice from the cells by the application of great pressure.

(c) When the expressed stomach juice is treated with excess of alcohol a precipitate is obtained which is active in the treatment of pernicious anæmia. This precipitate, in common with *desiccated hog's stomach and* expressed juice, gives all the usual protein reactions. The alcohol filtrate from this precipitate, however, furnishes on concentration a solid which does not give many of the protein reactions, and is inactive in the treatment of pernicious anæmia. It appears probable that the active principle of stomach is either a protein-like material or else a substance which is associated with or easily adsorbed by proteins, such as an enzyme.

(d) Below about 45° C. most enzyme solutions are comparatively stable, but above this temperature inactivation soon commences, until at about 70–80° C. they are very rapidly destroyed. Now, *according to Cohn*, the active principle in liver is fairly stable towards heat, and even prolonged concentration of its solutions at 60° C. in vacuo does not destroy it. On the other hand, we find that active stomach preparations quickly lose their activities when heated above 45° C. The fact that the activity of stomach is much more easily impaired by heat than is the case with liver is in harmony with the hypothesis that the active principle in stomach effective in pernicious anæmia is of an "enzyme" nature.

CLINICAL AND LABORATORY NOTES

ACUTE LYMPHATIC LEUKÆMIA WITH FACIAL DIPLEGIA AND DOUBLE ABDUCENS PALSY.

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AND
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A BOY, 11 years of age, was admitted to the Royal Infirmary, Cardiff, under the care of one of us on May 12th, 1931. He had enjoyed good health until three weeks previously when, on his return from school, his mother noticed that his face was "disfigured" and that his speech was affected. There was no history of injury. He was put to bed, where he remained until he was admitted to hospital. Before being admitted his speech had improved a little. On one occasion he had suffered from double vision.

On admission to the hospital he was found to have bilateral facial palsy of the Bell type. The facial muscles showed no response to faradism. He had no difficulty in swallowing, his tongue had normal movement, and his somewhat "blunted" speech was due to weakness of the facial muscles. The sense of taste was normal. There was definite paresis of the right external rectus muscle not amounting to actual paralysis, but complete paralysis of the left external rectus. The optic discs were normal. A few hæmorrhages were seen near the temporal vessels in the right eye and a small one on the inner side of the disc in the left. There was no choroiditis. The knee- and ankle-jerks were feeble on the right and absent on the left side. The plantar reflexes were normal. The cervical, axillary, and inguinal glands were moderately enlarged. The spleen extended 2 in. below the costal margin. The liver extended 1 in. below the costal margin in the nipple line.

Blood examination: hæmoglobin, 55 per cent.: red cells, 2,950,000; white cells, 480,000, containing 93 per cent. of lymphocytes. The Wassermann reaction was positive. The blood-urea was 27 mg. per 100 c.cm.

The *urine* was normal.

Treatment and course of illness.—On June 4th 50 mg. of radium were applied in one focus over the spleen for 94 hours at a distance of 1·5 cm., a screen of 3 mm. of lead being used. The subsequent record of the white cell count is of interest.

June		June	
4th ..	Radium applied	10th ..	Leucocytes, 141,000
5th ..	Leucocytes, 712,000	15th ..	„ 428,000
6th ..	„ 500,000	19th ..	„ 544,000
7th ..	„ 252,000	25th ..	„ 414,000
8th ..	„ 106,000		

At this latest date the red cell count had fallen to 1,110,000. One week after admission the gums began to swell. They were purplish in colour and bled easily. The smell of the breath was very offensive. Petechiæ occurred for the first time two days before death and then rapidly appeared all over the body. The temperature chart showed a continuous pyrexia of 99° to 100°, not altered after the application of the radium. Death occurred on June 26th, six weeks after admission to hospital and nine weeks after the onset of the illness.

Post-mortem examination.—The body showed a moderate degree of emaciation. There were numerous petechial hæmorrhages over the front of the thorax and there was evidence of recent bleeding from the gums. Petechial hæmorrhages were also present beneath the epicardium, in the substance of the lungs, and in the mucosa of the stomach. These organs were otherwise normal. The liver weighed 1100 g. It was slightly enlarged, pale in colour, and friable in consistence. The spleen weighed 380 g. Its capsule was thickened and its substance was firm and somewhat pale except for an area of hæmorrhage at its upper pole. The Malpighian bodies were indistinct. The lymphatic glands throughout the body showed considerable enlargement, and particularly the anterior mediastinal glands, which formed a tumour-like mass in the region of the thymus. The kidney substance was pale but mottled with areas of hæmorrhage in the cortex. In the right frontal lobe of the brain there was a small circumscribed brownish area 3 mm. in diameter having the appearance of an old hæmorrhage. No other lesions were visible in the nervous system.

Microscopical examination.—The lymphatic glands, the spleen, the liver, and the kidneys showed the typical histological appearance of lymphatic leukæmia. The lymphoid infiltration of the kidneys was particularly severe, there being a diffuse involvement of the cortex and large circumscribed collections of lymphocytes in the medulla.

In the right frontal lobe of the brain the discoloured area consisted of a mass of lymphocytes intermingled with blood pigment. Throughout the cerebrum and basal ganglia were found several small areas of perivascular infiltration of lymphocytes. In the pons were found two very small lymphomas, one in the region of the main nucleus of the left sixth cranial nerve, and one involving the right nucleus of the trapezium. In addition there was recent thrombosis of a vessel running through the right facial nucleus. The nerve-cells of the sixth and seventh nuclei on both sides showed chromatolysis, shrinkage of the cell bodies, and margination of the cell nuclei.

Serial sections were made through the intracranial portions of the sixth and seventh cranial nerves. In these were found commencing degeneration of the nerve-fibres, associated with a very slight degree of leukæmic infiltration of the nerve sheaths.

Cerebral complications in leukæmia usually take the form of gross hæmorrhages or large areas of leukæmic infiltration in the cerebral hemispheres. These lesions are associated with suddenly developing paralysis or such symptoms as delirum, headache, and vertigo. Less commonly, local involvement of certain of the cranial nerves develops. Fried[1] cites 30 cases, all of which were examined post mortem. These he separated into three groups. The first consisted of 13 cases in which the hemispheres and meninges were affected by hæmorrhages and lymphomas. The second comprised seven cases associated with involvement of the cranial nerves, and the third was a group of 11 cases in which the spinal cord was implicated. In those of the second group the eighth nerve was affected in two cases and the facial nerve in five. Four of these five cases showed bilateral facial palsy. Other nerves affected in the cases in this second group were the fifth, ninth, tenth, eleventh, and twelfth.

In addition to those quoted by Fried we have found the following cases recorded. Laroche and Chatelin[2] reported a case of chronic lymphatic leukæmia in which facial palsy of the Bell type developed suddenly on one side, followed the next day by a similar palsy on the other side. This patient, a man of 64, after suffering from his diplegia for three months recovered after radiotherapy. Tromner and Wohlwill[3] recorded a case of lymphatic leukæmia in a woman of 55 in whom both facial nerves were involved, and the abducens muscles and the palate paralysed. She also had ptosis and difficulty in speaking, and her sense of taste was affected. They also record an interesting case of myeloid leukæmia in a man of 46 who suffered severe pain in the right cheek not relieved by the extraction of two teeth. In this case leukæmic infiltration of the fifth nerve-root was found. The infiltration was between the nerve bundles and did not appear to implicate the fibres themselves. Spargenberg[4] gave an account of a young man 17 years of age with facial diplegia and paralysis of the left sixth nerve associated with acute lymphatic leukæmia. Three weeks after the onset of the illness the left side of the face became paralysed; 18 days later the right side together with the left external rectus muscle became involved. No post-mortem examination was made. The distribution the radiograph. Even in acute disease radiography may supply very useful additional evidence.

A standard technique should be adopted for all radiographs of the hip-joint, otherwise faulty interpretation of the radiograph is almost bound to occur. The patient should lie on his back with the lower limbs stretched out with the feet symmetrically inverted. The tube should be centred vertically over a point midway between the anterior superior spine and the symphysis pubis. Both hip-joints should be included on the one film so that a comparison of density and uniformity of structure can be compared.

Certain irregularities of conformation of the hip-joint due to development should be recognised, including the os acetabuli, fovea capitis femoris, and the crenated upper border of the acetabulum.

Congenital subluxation is much less common than congenital dislocation.

Congenital dislocation is much more common in the female in whom the left hip-joint is most commonly affected. Radiographs permit of early recognition of the condition and show that early treatment secures the best anatomical results. Severe trauma during reduction often results in stunted development of the femoral epiphysis and neck. Changes similar to those seen in Perthes or Legg's disease of the femoral epiphysis are not uncommon after the trauma of reduction or attempted reduction.

Many causes of coxa vara are known, including trauma, localised osteochondritis (the so-called infantile coxa vara), slipped epiphysis, localised bone diseases (tubercle, Perthes, syphilis, osteomyelitis), generalised bone disease (rickets, osteomalacia, achondroplasia, chondro-osteodystrophy, cretinism, Paget's disease).

Fracture of the neck of the femur in children is not uncommon. It is relatively rare in early adult life, but its incidence increases with age. The fracture may not be detected in children until a coxa vara deformity has developed unless the child is radiographed at the time of the injury. About 50 per cent. of the fractures of the neck of the femur in adults and elderly people fail to unite.

Slipped epiphysis appears to be due to some disintegration of the metaphysis rather than direct trauma, as most of the patients with this condition give no history of trauma, and the radiographic appearances do not support the trauma theory. The epiphysis may be completely reduced, and the best result is a premature fusion of the epiphysis with a resulting ¼-inch shortening of the limb; often, however, the epiphysis undergoes degenerative changes.

The condition of infantile coxa vara presents a radiographic appearance suggesting fracture of the neck of the femur, and is sometimes diagnosed as such. The condition has an active and a healing phase. Osteotomy during the active phase may result in complete absorption of the disorganised bone of the femoral neck. The condition may be unilateral or bilateral. It may be [illegible] by radiographs during the first year of life. [illegible] appearances of rickets are quite distinctive and different from those of infantile coxa vara.

Perthes or Legg's disease frequently shows more extensive bone changes on the radiograph than the clinical signs would suggest. It has an active phase during which the bone is plastic and gives way to pressure, and permanent deformity may result because of this. It is usually about four years before the disorganised epiphysis is completely consolidated.

The radiograph may not show any bone changes in a patient suffering from early tuberculosis of the hip-joint, though the clinical signs may be prominent. The first signs may be a relative rarefaction of the bones around the joint. On the other hand, a radiograph may show definite evidence of tubercle when the clinical signs have not suggested tubercle. These apparent contradictions are due to the variation in the site and spread of the infection. All patients with clinical signs of hip-joint disease and normal radiographic appearances should be radiographed again after an interval. Radiographs will give a good indication of the cessation of the activity of the disease.

Syphilitic coxitis is frequently bilateral, its radiographic appearances are sometimes mistaken for tubercle or Perthes, but the appearances are distinctive, particularly if a series of radiographs of the hip-joints are taken throughout the course of the illness.

In active septic arthritis of the hip-joint dislocation is common, and in the majority of cases the head of the femur is separated as a sequestrum, or is destroyed by absorption.

Acute arthritis of gonococcal origin is often followed by a marked reduction of the joint space and irregularity of the articular surfaces, and, later, lipping of the articular margins.

Arthritis of the hip-joint *occurring* in the course of rheumatoid arthritis frequently results in the condition of protrusio acetabuli, due to pressure of the head of the femur on the softened bone of the acetabulum.

Following active septic arthritis latent septic foci may be left in the neighbouring bone, which may at a later date become activated and reinfect the joint.

The first radiographs of the osteo-arthritic hip-joint usually show extensive disease, diminution of the superior joint space, sclerosis of the approximated articular surfaces indicating destruction of the articular cartilage, and eburnation and erosion of the articular surfaces. Cyst-like degenerative changes in the bone, particularly in the superior articular surfaces. Joints showing these cyst-like cavities in the bone, indicative of early osteo-arthritis, but no diminution of the joint space do not cause the patient pain.

Following injury in the neighbourhood of the hip-joint it is not uncommon to see localised *myositis ossificans*.

After the reduction of a dislocation of the hip-joint the radiograph may show what appears to be a normal hip-joint, but marked new bone formation may be shown on subsequent radiographs. This is important in medico-legal cases.

Damage to the articular surfaces may not show for a long period after the injury.

Paget's disease (osteitis deformans) and secondary metastases of *carcinoma* may be shown on a radiograph taken because of a *fracture* or "*sciatica*" before the clinical evidence has suggested these conditions. The radiographic appearances of fracture in the two conditions are very distinctive.

A radiograph of the pelvis and hip-joints may reveal evidence of malignant disease in a patient suffering from an obscure illness.

Pain referred to the area of the knee-joint in children and adults may be explained by the evidence on a radiograph of the pelvis and hip-joints.

UNIVERSITY COLLEGE HOSPITAL.—The cost per occupied bed last year was £170. A good report is given of the antenatal and maternity work; during last year 90 per cent. of the mothers received an anæsthetic during labour without any ill-effect upon them or the children. Deep X ray therapy is being rapidly developed, and there is no scarcity of nurses.

that instead of pus we got pure liquid blood. Gas and oxygen anæsthesia was being adopted, as the patient would not allow even a puncture without it.

During handling of the mouth by the anæsthetist there was profuse bleeding, which was found to issue from the swollen, bluish gums. A history was obtained, after inquiry into diet, that the patient has not had green vegetables for last three years. A tight bandage was applied over the affected knee-joint, and six sour limes were ordered per day from the next morning. The improvement was so striking and remarkable that we were induced to increase the number to a dozen per day after a week. The patient's temperature became normal, he slept well, and his joint swelling vanished. At the end of a fortnight the remaining effusion of blood was got rid of by application of six leeches and Scott's dressing. At the end of three weeks the patient was out of bed, and his weight and general health have since improved considerably. He has been advised to take sour limes throughout the year.

Certain deductions can be drawn from the above case. (1) In acute or chronic arthritis with effusion the possibility of the presence of blood should be kept in mind. (2) In all joint affections, a routine examination of gums, an inquiry into the dietary of the patient, or of the occurrence of hæmorrhages elsewhere, would lead to greater accuracy in diagnosis. (3) Before freely incising any joint cavity an exploratory puncture in the operation theatre would help in the decision whether to operate or not.

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON.

AT a meeting of this society on March 21st, with Mr. HERBERT TILLEY, the President, in the chair, a discussion took place on the

Diagnosis of Diseases of the Hip-joint.

Dr. J. F. BRAILSFORD opened the discussion with a paper published on p. 721 of this issue.

Mr. D. MACRAE AITKEN said that clinical diagnosis ought to come before X ray diagnosis, because pain and symptoms would frequently be found before there had been time for such alterations in the bone texture as would show in the radiogram; symptoms and pain would also disappear long before the bone was cured. Mr. Aitken showed a number of radiograms relating to cases which he had followed right through from the onset of the disease or injury to the end. One case was a small boy who was brought up with recurring pain in the hip for seven months, and a diagnosis of tuberculosis. The essential point, however, was that although there was rarefaction of bone, there was a relative density of the head of the femur, and this appeared to contra-indicate tuberculosis, and the rarefaction was characteristic of that seen in Perthes' disease. The symptoms disappeared on treatment by recumbency, though some weakness still remained. In another child with a fragmented head, he decided that the head should not be allowed to bear weight, and therefore treated it in a double Thomas frame until he saw what he thought was full repair in that head. He showed by means of lantern slides the stages of the progress of the case over a period of three years, illustrating the slowness with which regeneration took place. The child had now a good round femur head, with no overlap to be seen. He disagreed with Dr. Brailsford in suggesting that slipped epiphysis was not the result of injury. His own opinion was that it was due to a twist injury in which the head remained in the acetabulum, the cartilage gave way, and the injured area became hyperæmic along the region of repair. He showed slides relating to a girl who had strained her hip at hockey, and had the same sort of pain as was found in the early stage of slipped epiphysis. He diagnosed the case as an attempt at slipped epiphysis, the girl being a little too old to have the actual condition. Mr. Aitken went on to remark on the operation introduced by Lavalle, of Buenos Aires, which consisted of tapping the hyperæmic area and putting in a thin spine of bone, so as to relieve congestion and promote bone repair. The success of this operation turned upon its ability to hasten the repair of the bone, and Mr. Aitken had definitely found that it did so. He had taken relapsed cases, in which the only course appeared to be to do an ankylosis, and in every case subjected to Lavalle's operation the pain and spasm had been relieved within a week. It was important, however, that the operation should take place into the hyperæmic area, and not into the caseous area. The operation had been adversely criticised by various authorities on the Continent, but Lavalle had insisted on the need for going into the hyperæmic areas, with the help of very good X ray pictures, and of avoiding the "cheesy" areas. Certainly in the cases which the speaker had seen the operation had been well justified, and he thought it a useful procedure for saving joints from destruction.

Mr. WHITCHURCH HOWELL said that in the child, in the case of tuberculous hip, opinion was veering round towards surgical treatment in some form. If he himself had a tuberculous hip-joint he would wish to have it ankylosed, but if he had arthritis of the hip he would wish to have some form of surgery done other than ankylosis, preferably some form of arthroplasty or, if that failed, arthrodesis. With regard to Lavalle's operation, he felt that this was only half tackling the problem, and that the surgeon ought to have more courage and undertake a real surgical approach to the hip-joint.

Mr. N. ST. J. BUXTON said that the cases for diagnosis of hip-joint conditions which were most difficult to him were the ones which resulted in a normal X ray picture. He mentioned the case of a schoolboy of 15 who was injured while playing football. He was told to lie up for a few days, and after about a fortnight went again into the football field, and his hip failed. The skiagram showed a normal appearance. After rest in bed for a fortnight or three weeks normal function was recovered. Of course, now and again one discovered tuberculosis in that way, but he took it that in the majority of these cases there was an effusion in the joint which, in the case of the knee, was visible because there the fluid was entirely superficial, but it was not seen in the case of the hip. When there was osteomyelitis in the upper part of the femur also the X ray picture was often normal.

Dr. BRAILSFORD, in replying on the discussion, admitted that in acute cases very often little help could be given by means of X rays, though at times information was forthcoming by that means which would not be possible by any other. With regard to the treatment of Perthes' disease, of which Mr. Aitken had shown so excellent an example, he noticed that in the last report of the American Orthopædic Association a remark was made to the effect that no good had come from rest treatment in this condition. But one had only to look at Mr. Aitken's examples to see that the condition could heal in the most wonderful way if treated properly.

of the paralysis was identical with that of the case we are now reporting, except that only one sixth nerve was affected in Spargenberg's case. One feature of special interest in his case was that a paralysis of one side of the face occurred while the leucocyte count was only 9000 with 76 per cent. lymphocytes, whereas later the white cells mounted to 151,000.

In those of the above cases where histological examination was made, the involvement of the cranial nerves was ascribed to leukæmic and hæmorrhagic infiltration of the nerve trunks. The present case, although corresponding clinically with the foregoing, differed pathologically in that the lesions involved the nuclei and not the nerve trunks. The lesions we found—namely, capillary thrombosis, perivascular accumulation of lymphocytes, and lymphomatous nodule formations—are, according to Fried, characteristic of intracranial changes in lymphatic leukæmia. Our case was unusual in that the pons was conspicuously affected.

A complicating feature in our case was the positive Wassermann reaction, since the possibility of the nervous lesions being syphilitic in origin had to be considered. Histologically, however, the lymphomas were characteristic of leukæmia, and apart from the perivascular infiltration of lymphocytes the vessel walls were free of lesions. No histological evidence of syphilis either in the brain or the meninges was found.

These cases make it evident that cranial nerve involvement in leukæmia may develop in a number of ways. Infiltrations and hæmorrhages may affect the nerves or their sheaths or the nerve nuclei. A case reported by Harris [5] suggests another possible occurrence. In his case symmetrical polyneuritis with symptoms of lymphatic leukæmia were found. He was of the opinion, on account of the symmetry, that the lesions were toxic in origin, in spite of the fact that he found the nerves infiltrated with lymphocytes. So far as the cranial nerves are concerned, however, pathological investigation would seem to show quite definitely that the lesions are due to leukæmic and hæmorrhagic infiltration rather than a toxin.

We wish to thank Dr. Leighton Davies for his report on the condition of the eyes in this case.

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ADSORPTION OF IODINE BY ACTIVATED CARBON IN WATER TREATMENT.

BY B. A. ADAMS.

(From the Chemical Research Laboratory, Teddington, Middlesex.)

THE association of the iodine-content of a water-supply with the prevalence of endemic goitre has led to investigations of the effect of various purification processes on the iodine-content. Heymann [1] with the Amsterdam supply and Orr, Godden, and Dundas [2] with Aberdeen water have shown that only a small loss of iodine occurs as a result of filtration. Chlorination of London's water was found to have no effect on the iodine-content.[3] Softening by Clark's process (addition of lime followed by sedimentation of the precipitated calcium carbonate) however was observed to bring about a reduction of 50 per cent. of iodine in the Canterbury water.[4] Activated carbon is now being extensively employed for the removal of tastes and odours as well as for other purposes in water treatment and this substance is known to adsorb iodine and iodides from solution.

In order to study the effect of activated carbons, similar to those used in water treatment on aqueous solutions of iodine, two series of experiments were undertaken.

(*a*) Amounts of 3000 c.cm. of water containing 20 γ per litre (2 parts per 100 million) of iodine in the forms given below were passed through a 40 c.cm. bed of carbon contained in a glass tube (1·5 cm. diam.). (*b*) To 3000 c.cm. of similar solutions very finely divided carbon was added in an amount of approximately 0·5 parts per 100,000 and after stirring for a few minutes the solution was filtered through sand. Of the treated water 2000 c.cm. was taken for the determination of the iodine and the sodium nitrite process of Martindale and Westcott (loc. cit.) was usually employed, although certain modifications were necessary in some instances—namely, the addition of potassium nitrate prior to incineration to ensure the oxidation of the iodo-compounds in the presence of organic matter. The following forms of iodine were used: iodine, hydriodic acid, potassium iodide, potassium iodate, iodoform, iodophenol, and an infusion of the seaweed bladder-wrack (*Fucus vesiculosus*).

Both in distilled and tapwater (M.W.B. derived from the Thames) all these forms of iodine were removed invariably and completely by treatment with activated carbon either by passage through its granular form or by the addition of the powdered variety. The dissolved iodine is usually considered to exist in natural waters, either in the free state or as an iodide or iodate, but it probably sometimes occurs in organic combination.

Although it is desirable that an investigation on this subject should be carried out with a water-supply actually being treated with activated carbon before final conclusions can be drawn, these results show that certain forms of iodine are removed completely by such treatment. It is evident, therefore, that discrimination in the application of carbon in the treatment of water or replacement of iodine removed by the carbon may be desirable.

The author is indebted to Prof. G. T. Morgan, F.R.S., director of chemical research in the Department of Scientific and Industrial Research, for the interest taken in these experiments and for permission to publish the results.

SCORBUTIC HÆMARTHROSIS OF KNEE.

BY J. DURLABH DHRUV, F.R.C.S. ENG.,

SURGEON TO THE SIR JAMSHEDJI JIJIBHAI HOSPITAL, BOMBAY.

A HINDOO male patient, aged 32 years, sought advice at hospital because of inability to walk, and swelling of the right knee-joint. This joint had become swollen for a week without any injury.

He was extremely ill and was brought on a stretcher at the out-patient department. The knee-joint was hot, there was patellar tap, and the whole joint surface was very tender. He had had continuous fever for past six days, and a pulse-rate of 120 per minute, with a dirty tongue. There was thus a clear picture of a suppurative arthritis of knee. A colleague who happened to be present at the time agreed with me in this diagnosis. On exploratory puncture, before the operation, we found to our surprise fœtus, and the Aschheim-Zondek test was negative. She menstruated regularly for three months, and was then found to have a slightly irregular tumour reaching to a point two-thirds of the way to the umbilicus, and extending in the recto-vaginal space to within two inches of the perineum.

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[1] Water en Gas, 1925, ix., 39.

[2] Jour. Hyg., 1928, xxvii., 197–199.

[3] Martindale and Westcott: Extra Pharmacopœia, 1929, ii., 428, 429.

[4] Orr, Godden, and Dundas: Loc. cit.

Laparotomy revealed a pale, irregular, partly cystic tumour which was invading both broad ligaments and almost filling the pelvic cavity, a small area of the upper part of the uterus only being visible. Enucleation being impossible, the uterus was removed with the tumour, but the appendages were conserved. Histological examination of the tumour revealed a telangiectatic condition in places, and a collagenous stroma separating columns and strands of cells suggesting either an œdematous fibro-sarcoma, or an endothelioma, apparently arising in the cervix.

Mr. N. L. **Edwards** (Sheffield) showed two specimens of ovarian tumours resembling granulosa-cell cancer.

The first was removed from a married woman, aged 54, who was menstruating regularly, and had noticed an abdominal swelling with attacks of pain for several months. The tumour, roughly oval in shape, contained a cystic part near the lower pole and a solid area appearing like a scirrhous carcinoma, in the upper part. Section of the cystic part showed a typical cyst-adenoma, while the solid part of the tumour contained a dense stroma and also groups of epithelial cells arranged radially, many groups having a central clear space. In some of the central cavities there was a large cell containing much protoplasm, the whole picture suggesting an immature follicle and the consequent diagnosis of granulosa-cell cancer.

The second specimen was a large cyst weighing 17½ lb. removed from a patient aged 68. There was an irregularly lobulated solid mass the size of a coco-nut projecting from the main cyst. Section showed alveoli containing pseudo-mucin, and lined by several layers of high columnar cells resembling early carcinomatous change in a cyst-adenoma, but also certain solid groups of cells surrounding a central space which again suggested granulosa-cell cancer.

Mr. Edwards referred to Goodall's theory of the derivation of cyst-adenomata from the reticular cords, and to the possibility that, in the event of malignant changes taking place in one of these cysts, the cells might revert to a type bearing some similarity to those of the membrana granulosa.

THE LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING of this Association was held at B.M.A. House on March 17th with Dr. **Letitia Fairfield**, the President, in the chair. A symposium of four papers was read on

Analgesia and Anæsthesia in Normal Labour.

Dr. **Rhoda Adamson** (Leeds), speaking on the obstetrician's aspect, said that the objections voiced by the medical profession against the use of anæsthetics in midwifery cases came under three main heads, (*a*) the time that the medical attendant needed to spend with the patient, (*b*) the risk of post-partum hæmorrhage, (*c*) the risk of death from the administration of the anæsthetic. She pointed out that the obstetric art had changed from the province of the physician to that of the modern obstetric surgeon. At the present day, midwifery was considered to be always a department of surgery, and was only occasionally complicated by some medical condition such as a toxæmia or cardiac incompetence. The process of labour, if it was to be looked upon from the surgical point of view, could best be compared in the first and second stages to a colic, which was terminated by a spontaneous amputation at the placental attachment at the end of the third stage. Women who had experienced a spontaneous labour and a renal or biliary colic held that the pain was closely similar. Authentic cases of entirely painless labour had been observed, but they were undoubtedly very rare. Some observers denied the very existence of obstetric shock apart from faulty obstetric practice, but Dr. Adamson quoted cases where labour had been spontaneous, without any interference, and the patient suffered from severe shock. Want of rest and sleep during the first stage of labour led to exhaustion, and predisposed to shock; sedatives or narcotics were needed if the labour was prolonged. In the second stage of labour some form of anæsthetic helped to prevent laceration of the perineal body. If the pain was relieved, the patient was more amenable, and the scientific delivery of the child's head was achieved by the obstetrician only at the proper time. Dr. Adamson held that anæsthesia pushed to complete surgical degree at the time of the crowning and delivery of the head was the best aid to preventing tears. The objections raised to the giving of an anæsthetic in labour were then discussed. Many maternity nurses, from a desire to show their skill, welcomed the chance of a delivery before the advent of the doctor. This attitude in the maternity nurse was often encouraged by the family doctor unknown to the patient. The fee charged for a private maternity case in working- and middle-class practice was ludicrous in its disproportion to the demands upon the time and responsibility of the doctor. While such low fees were paid there was some justification for the point of view that midwifery takes up too much time from the busy general practitioner when he has other duties to perform. Dr. Adamson had found no evidence that the risk of post-partum hæmorrhage was increased by the use of a general anæsthetic.

In the Leeds Maternity Hospital it had been the practice since 1926 to administer a general anæsthetic to the obstetrical degree to all patients in exactly the same way as an administration would be given in an ideal private practice. This had been instituted for three main reasons: (1) humanitarian, to relieve suffering of the patient; (2) to teach the students the use of chloroform given by the drop method, since the anæsthetic of choice for general surgery is ether. It was also hoped that the students would learn to look upon an obstetric anæsthetic as the usual procedure, and that when they became family doctors they would use it on their patients; (3) the administration of a general anæsthetic made a deliberate delivery possible in every case, so that the stages could be demonstrated to every medical student and pupil midwife present at the labour. The anæsthetics were given in turn by students holding obstetric clerkships for three months, during which time they lived in a hostel beside the hospital, and were available for all deliveries during 24 hours every day. Anæsthetics were given for (1) examinations for estimating disproportion in contracted pelvis, and for certain versions, (2) all operative deliveries, (3) normal deliveries in every case of which the second stage lasted long enough for anæsthesia to be started. For examinations and version, open ether was given, and for operative deliveries the anæsthetic chosen depended on the type of operation—i.e., for a Cæsarean section usually ether, unless a spinal anæsthetic was preferred, and for a forceps delivery or perineal suture usually chloroform. In all normal deliveries chloroform was used after the presenting part began to dilate the vulvar orifice, and was continued until complete delivery of the head, delivery of the trunk and placenta being effected without any further anæsthesia while the patient was still somewhat under its influence. Open ether was used when the patient

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

At a recent meeting of this society held in Sheffield a paper on the

Conservative Treatment of Eclampsia

was read by Drs. E. A. Gerrard and R. L. Newton (Manchester). The 100 cases on which it was based had been collected during three and a half years, at St. Mary's Hospital, Manchester, and one or other of the authors had been partly responsible for every case. The paper began by reviewing the results of treatment during the 20 years from 1908 to 1928. Before 1920 there was no routine method of treatment, but this usually consisted of purgation and diaphoresis, while Cæsarean section and accouchement forcé were frequently resorted to. The mortality-rate for this period was 35·6 per cent. In 1920 the Dublin method was adopted, and as a result the mortality-rate fell to 19·8 per cent. for the following eight years. A criticism of this method was the adverse effect that repeated colon lavage appeared to exert upon the patient's heart. In 1928 a method was evolved which combined Stroganoff's method with certain eliminative measures. This method consisted of administration of morphia gr. ¼ and coramine (a camphor preparation) 1 c.cm. Half an hour later gastric lavage was performed, leaving in the stomach castor oil (2 oz.) and croton oil (2 minims); also colonic lavage was carried out, 2 oz. of magnesium sulphate being left in the colon. At 1½ hours, grs. 30 of chloral hydrate were administered by rectum or mouth; and the morphia repeated at 3 hours. The dose of coramine was repeated at the 4th, 8th, 12th, 16th, and 20th hours, and chloral hydrate grs. 30 was administered at 7 hours, while grs. 20 were given at 12 hours, and then eight-hourly if necessary. As a result of the advocacy by Schwarz and Dieckmann of the administration of intravenous glucose and intramuscular magnesium sulphate, the following additions were made to the standard treatment. At the commencement of treatment 10 c.cm. of 25 per cent. solution of magnesium sulphate were given intramuscularly, and 5 c.cm. after each convulsion, and at the same time dextrose was administered intravenously, 1000 c.cm. of 20 per cent. solution being employed, the injection being repeated if necessary.

There was no operative interference during labour, but in a certain number of cases induction of abortion or of labour was carried out on account of persistent albuminuria following recovery from eclampsia. The mode of delivery was by natural forces in 54 cases, by forceps in 17 cases, by induction followed by natural delivery in 7. There was spontaneous abortion in 8 cases, and induced abortion in 3 cases. Version followed by extraction, breech extraction, Cæsarean section, and craniotomy were each performed on one occasion, and 5 patients died undelivered. There were seven deaths in the 100 cases, and the mortality fell from 10 per cent. in 40 cases to 5 per cent. in 60 cases as a result of the introduction of dextrose and magnesium sulphate into the treatment. The fœtal mortality-rate, after excluding 18 cases of post-partum eclampsia and 11 abortions, was 57·7 per cent. This also included neonatal deaths. Only seven of the patients had attended the hospital clinic, and of these, three had not attended for some time, and all developed post-partum eclampsia. Two cases developed post-partum eclampsia after the commencement of eliminative treatment for albuminuria. In another case ante-partum eclampsia resulted within a few hours of eliminative treatment being started, and in the last case eclampsia followed labour induced for persistent albuminuria. Albumin was absent from the urine on admission in five cases and none of these patients died. The urine was clear in 78 of the cases on discharge from hospital.

In reply to questions raised during the discussion, Dr. Newton stated that the blood-pressure changes had afforded no help in the investigation. He only used chloroform during the preliminary washing out of stomach and colon in the presence of restlessness. The administration of glucose should be followed by polyuria, 200 g. being the maximum amount that it was safe to give, more being followed by glycosuria.

Accessory Ureter.

Dr. J. W. A. Hunter (Manchester) described a case of accessory ureter opening into the vagina.

The patient, whose age was 14, complained that in addition to normal micturition there was dribbling of urine for about an hour after the act, and intermittently at other times. There was incontinence of urine while she was asleep, and her mother stated that she had never been dry since infancy, in spite of many courses of treatment by drugs and training.

On examination the labia minora were markedly hypertrophied, and after insertion of a speculum a small opening, from which watery fluid exuded, was seen about half an inch above the urethral orifice slightly to the right of the middle line on the anterior vaginal wall. A probe passed for about two inches in a direction parallel to the urethra. The patient admitted to masturbation, and said that the irritation caused by the constant moisture had initiated this practice.

On investigation by cystoscopy after indigo-carmine injection two ureters were shown opening in normal positions, and each kidney apparently was functioning normally. Sodium iodide was injected into the suspected accessory ureter with some force, and radiological examination showed a track extending in a tortuous manner to the upper part of the right kidney. In conjunction with Mr. Hector Scotson, Dr. Hunter decided to explore the right kidney after a bougie had been passed along the right ureter as far as the renal pelvis. At operation normal kidney tissue was present with a large pelvis, but a small upper pelvis drained the upper pole of the kidney and led into a thickened tortuous and dilated tube, obviously the upper end of the accessory ureter. A wedge of the upper pole of the kidney with about six inches of the accessory ureter was excised. Convalescence was uneventful, the function of the right kidney was later shown to be normal, the patient is now in perfect health, and there has been a complete cessation of incontinence and masturbation.

Dr. Hunter had traced over 100 cases of accessory ureter opening externally, and mentioned several series of cases. He referred in particular to the theory advanced by Spitzer and Wallin in 1928, and confirmed by Kraft in 1931. This was to the effect that the so-called supernumerary kidney and ureter opening into the vagina is really a persistent mesonephros and Wolffian duct, thus distinguishing the condition from supernumerary ureters opening intravesically which result from bifurcation of the normal ureter. Dr. Hunter believed that his case afforded further proof of the theory. No indigo-carmine appeared at the accessory opening and there was no smell of urine and no evidence of irritation in the vulva or vagina. Also at operation the upper pole of the kidney was found to have a blood-supply quite distinct from the rest of the kidney.

Pelvic Tumours.

Prof. A. M. Claye (Leeds) described an unusual pelvic tumour removed from a patient, aged 29, who gave a history of two abortions and who was sent into hospital with a diagnosis of threatened abortion.

There was an enlarged uterus suggesting a retroverted gravid uterus, but X ray examination failed to show a

But the argument for sedatives and analgesia was chiefly that they would relieve the ordinary woman in her so-called normal confinement from severe and prolonged suffering which it was no longer necessary that she should bear. Dr. Phelps herself preferred, when the patient sent for her in good time, to give a sedative such as pot. brom., chloral hydrate with tinct. opii or an opium pill as soon as the pains began to cause discomfort. The sedative did not delay the labour ; it often seemed to expedite matters. The dangerous effect of opium on mother and child seemed to have been rather exaggerated, unless it was given in large and repeated doses. She withheld the anæsthetic until the head was upon the perineum, and gave it only for the last and most painful period of the labour. The difficulties could be met by a greater measure of coöperation between doctors and midwives in the management of pregnancy and labour. The delivery of the child might well be left in the hands of midwives, while the doctor who had been trained in the knowledge and use of potent and dangerous drugs should be responsible for the administration of sedatives and anæsthetics. It should be possible for all primiparæ, and all multiparæ who require it, to have the boon of sedatives and anæsthetics in childbirth. It was after all no new thing, and women in better economic circumstances had had it for years with no bad results. The time had gone by when one class, because of its poverty, should be debarred from the relief of prolonged and extreme pain.

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Miss Eva Pye (President of the Midwives' Institute) said that the fact that 60 per cent. of the births in this country were attended by midwives, and the theory that they were not fit to be trusted with any drug other than a simple aperient, had no doubt added its weight to the inertia on this question of the alleviation of pain in normal childbirth. The scantiness of the midwives' training in the use of drugs, the fact that local authorities discourage them from using drugs, and the acceptance among patients of the idea that nothing can be done to relieve pain, has led to midwives acquiescing in doing nothing to relieve quite unnecessary suffering. This attitude, said Miss Pye, was indefensible, being unscientific as well as heartless, and it might be one of the contributory causes of maternal morbidity, even mortality, through the exhausting effect of acute pain, and the debilitating effect of fear of it. In the first stage of labour, the use of sedatives was essential in some cases, and advisable in most, if not all. There was nothing in their rules to prevent midwives from making use of chloral, bromide, or even opium, provided they had been properly taught how and when to use them, or other suitable sedatives. Not a single case had been quoted in which the administration of sedative drugs by the midwife had proved harmful. It was not true that these drugs if harmless were also useless. The psychological aspect of the relief of pain and distress could best be observed by those who remained with the patient throughout her labour. The value of active treatment during the first stage with a firm promise of help for the final pains was of inestimable value. The midwife's practice was concerned with normal labour only, and as far as her experience was concerned she did not consider that for the second stage general anæsthesia was either necessary or advisable. She regarded it as an actual danger, in view of the temptation to the medical practitioner who alone could administer it, to interfere with the normal course of labour in order to shorten it, because of the pressure of his other work. There was, however, much to be said for being able to give the patient something to inhale during the later pains, and at their height, which would render the mother less sensitive. She had conceived the possibility of crushable capsules of chloroform, and these were now on the market. Thanks to the National Birthday Trust Fund the money had been found for the initial experiment of testing their value during the last nine months. Under Mr. Carnac Rivett the resident staff at Queen Charlotte's Hospital had tested them, and at the Middlesex Hospital the midwives had also tested them with complete success. From two to at most four capsules of 20 minims each appeared to give satisfactory relief, and there had been no contra-indication. Since the very small quantity of chloroform involved precludes true anæsthesia, and since an absolute check on any midwife using them would be available through her register in which the administration of each capsule would be entered, it was hoped that local authorities would not place any difficulties in the way. The use of such capsules would enable every mother in the country whose case was normal to have sufficient relief to take away the worst of the pain, together with the fear of it. Midwives wanted better training in the use of drugs that relieve pain in childbirth, and the free use of such drugs in training schools for midwives. As the attendants upon a normal function, midwives asked to be taught to remove as far as possible, fear, distress, and pain from every normal labour.

Mrs. Ivens Knowles said that she had always advised the use of morphia, although there had been a disinclination to allow midwives to give injections without the permission of the doctor in charge. Midwives should first be taught, and then authorised to give sedatives. She had never seen ill-effects from analgesia in the first stage. The administration of gas and oxygen was now taught to students. Would it not be better for them to learn simpler methods which could be used in practice ?

Mrs. Mallison asked whether there was any danger in allowing patients to use a Junker apparatus. Dr. Browne, in reply, thought that there was no danger to the mother because air was given with the chloroform, but a very long administration might have a bad effect on the child.

Dr. Dulcie Lukis said that when the patient has a severe pain she merely gripped the bulb hard and did not pump.

In answer to a question as to whether the few minims of chloroform had an actual analgesic action or worked mostly by suggestion, Dr. Adamson said that she had been asked to test some of the capsules spoken of by Miss Pye and had formed the impression that they were not so efficacious as chloroform by the drop method, but were much better than nothing. The difficulty would be to persuade local authorities that midwives should be allowed to use such capsules.

Dr. Katharine Lloyd Williams, who demonstrated a portable apparatus made by Messrs. King and Morgan, said that gas and oxygen was very simple to use and she could see nothing against allowing midwives to use it.

Dr. Remington Hobbs said that for many years at St. Mary Abbots Hospital no arrangement was made for analgesics in normal cases. Later morphia and a few whiffs of chloroform and ether were given and now gas and oxygen was the routine. He had already had chloroform, or suffered from toxæmia or organic heart disease.

Comparing results before and after 1926 when the general use of anæsthetics was instituted in her hospital, Dr. Adamson said that deliveries now were about 145 each month, against about 100 before 1926. The number of hæmorrhage cases and the number of cases of perineal laceration had lessened. No anæsthetic deaths had occurred. At present anæsthetics were not being given on district for normal cases. She considered that a discussion upon anæsthetics in obstetrics would be a matter for astonishment to the next generation for these reasons: (1) The mothers of the next generation would demand relief from the pain in childbirth as a rule, and would refuse to bear children if this was not conceded. (2) Obstetrics would come to be more and more looked upon as a branch of surgery involving the occurrence of a visceral colic, which led to great physical exhaustion, mental jolting, and surgical shock if unrelieved; on surgical grounds the use of anæsthesia would be considered an essential part of the scientific management of a maternity case.

THE ANÆSTHETIST'S STANDPOINT.

Dr. **Enid Browne** suggested that analgesia rather than anæsthesia was wanted, so that the mother could retain some consciousness of the hours of her delivery, while her pain was made tolerable. Three pains stood together as the most acute in character and exhausting in effect—biliary colic, renal colic, and the pain of a woman in labour. The two former were relieved as a matter of course; the latter thus far we had been content to watch because it was physiological in origin. At last there was an awakening to the real need of the woman in childbirth, which was not only that of safe delivery. Two main classes of drugs were available: drugs that could be taken by mouth, or injected, and inhalation anæsthetics. Injection could be rectal, intramuscular, intravenous, or spinal. Of rectal injections quin-ether and avertin had their indications, but only a small proportion of cases were suitable for rectal injection. Of intramuscular injections, morphia and its derivatives, especially opoidine and scopolamine, were discussed. With the latter each case needed careful watching. In some because the pulse became alarmingly rapid, or the patient might become maniacal. Of intravenous drugs, pernocton, sodium amytal, and nembutal were hypnotics, and when the amount necessary to produce deep hypnosis or analgesia was given, the drop in blood pressure might be alarming. Nembutal was now being tried at the London Hospital and at Queen Charlotte's. The pains were unaffected, but the patient had no memory of them. Spinal injections were very useful for the second stage in bad cardiac cases, but were limited in the time of action and not easy to give to one already in the throes of labour pains.

Inhalation anæsthetics.—Of these, ethylene had the disadvantage of being highly explosive; ether was also inflammable as well as being unpleasant to take and had also other disadvantages for routine use. C_2E_3 was a useful combination which might be more widely used in midwifery. Chloroform was of small bulk, potent and controllable in character. To the practitioner working single-handed it was invaluable, and the patient could safely be given a Junker to operate herself. It was the anæsthetic of choice if required for second stage or actual delivery of the head only. Dr. Browne enumerated the well-known disadvantages of chloroform, and pointed out that gas and oxygen was an anæsthetic that could be used from the beginning of the first stage to the end of the third stage if wanted, without harm to either mother or child. Its merits included depression of pain centres without loss of consciousness, absence of interference with the normal mechanism, a shortening of the second stage (because the patient's coöperation brings voluntary forces into play), and absence of shock and hæmorrhage. The difficulty of its universal use lay in its cost and its mechanical complexity. At present it was available only for the wealthy or the institutional patient. At the Royal Free Hospital, through a fund raised by Lord Buckmaster, Lady Balfour of Burleigh, and others, a resident anæsthetist was available for the service of normal labours. In the obstetrical unit under Prof. McIlroy, no woman who wished for alleviation of her pain need go without for want of an administrator. The unit statistics for the last six months' work, covering some 300 cases, would shortly be published. The general plan was to give sedatives either by mouth or intramuscularly during the first stage of labour, and gas and oxygen throughout the second stage, with either chloroform or ether for the crowning of the head. Experience had proved that if given at the right time (three fingers dilatation) morphia does not damp off the uterine pains. Given in the form of opoidine (1 c.cm. being equal to gr. 1/6 of morphia), it had had no harmful effect on any child. In the 300 cases there had been no case of P.P.H. attributable to analgesics. Even after a long labour, those who had received opoidine were alert and normal immediately after delivery. Miss Oldaker, the obstetrical anæsthetist, had informed the speaker that the whole of the cases had been anæsthetised during the second stage with gas and oxygen, except where they refused, or where the second stage was very rapid; the mothers described it as a godsend. Finally, Dr. Browne drew attention to a recent article by Prof. Hugo Sellheim, of the Frauen Klinik, Leipzig, appealing for the sanction of the profession for the administration of certain analgesics by midwives in the absence of the doctor. He pointed out how hard it must be for the midwives to listen to the "ceaseless complaining of the tormented woman" and have so little to offer her for her relief. Sixty per cent. of the women in England were delivered by midwives in their own homes; if our ideal was the alleviation of labour pains for every woman, we must pursue the quest for possible analgesics untiringly till we had found the maximum potency that could be given with absolute safety, not only by medical hands.

ANÆSTHETICS IN GENERAL PRACTICE.

Dr. C. **Phelps** said that it was necessary to remember what a simple thing an ordinary labour might be. She gave a graphic description of the difficulties which beset a doctor who attends a working-class woman in her home. A willing and conscious patient who would use and control her pains under the doctor's direction was usually easier to manage than a patient who was drowsy from drugs, light-headed and without self-control after light chloroform inhalation, or unconscious. Asepsis was more difficult to maintain when an anæsthetic had to be given or supervised by the accoucheur, while prolonged chloroform anæsthesia caused some lack of tonicity in the uterus, and sometimes a certain amount of hæmorrhage occurred when the placenta was separating. These difficulties were not insurmountable, and were mostly due to being single-handed. It was certain that the use of sedatives reduced the strain and exhaustion of a prolonged labour, while a timely anæsthetic might save a perineum from a troublesome tear.

But the argument for sedatives and analgesia was chiefly that they would relieve the ordinary woman in her so-called normal confinement from severe and prolonged suffering which it was no longer necessary that she should bear. Dr. Phelps herself preferred, when the patient sent for her in good time, to give a sedative such as pot. brom., chloral hydrate with tinct. opii or an opium pill as soon as the pains began to cause discomfort. The sedative did not delay the labour ; it often seemed to expedite matters. The dangerous effect of opium on mother and child seemed to have been rather exaggerated, unless it was given in large and repeated doses. She withheld the anæsthetic until the head was upon the perineum, and gave it only for the last and most painful period of the labour. The difficulties could be met by a greater measure of coöperation between doctors and midwives in the management of pregnancy and labour. The delivery of the child might well be left in the hands of midwives, while the doctor who had been trained in the knowledge and use of potent and dangerous drugs should be responsible for the administration of sedatives and anæsthetics. It should be possible for all primiparæ, and all multiparæ who require it, to have the boon of sedatives and anæsthetics in childbirth. It was after all no new thing, and women in better economic circumstances had had it for years with no bad results. The time had gone by when one class, because of its poverty, should be debarred from the relief of prolonged and extreme pain.

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Dr. **Remington Hobbs** said that for many years at St. Mary Abbots Hospital no arrangement was made for analgesics in normal cases. Later morphia and a few whiffs of chloroform and ether were given and now gas and oxygen was the routine. He agreed that more scope should be allowed to midwives, who should be allowed to give morphia or chloroform capsules.

Miss Margaret Basden laid stress on the mental factor. Women had great fear of the pain of labour.

Lady Barrett pointed out that even if gas and oxygen were relatively expensive the cost would be negligible as a national expenditure if midwives could be trained to use it, and it was such an extremely good anæsthetic that it could certainly not be left out of consideration. Research ought to be concentrated on an anæsthetic suitable for the large percentage of women delivered by midwives.

REVIEWS AND NOTICES OF BOOKS

Manual of Bacteriology.

Ninth edition. By Robert Muir, M.D., F.R.S., and the late James Ritchie, M.D., F.R.C.P. Edin. Revised by Carl H. Browning, M.D., D.P.H., F.R.S., Gardiner Professor of Bacteriology, University of Glasgow; and Thomas J. Mackie, M.D., D.P.H., Irvine Professor of Bacteriology, University of Edinburgh. London: Humphrey Milford, Oxford University Press. 1932. Pp. 866. 20s.

Our old friend, Muir and Ritchie, has reached its thirty-fifth birthday, having been revised, on an average, once in every four years during its life. Its format is the same as that in which it first saw the light but its slim figure has reached that portly habit which is so frequently the penalty of middle age. Prof. C. H. Browning and Prof. T. J. Mackie are responsible for the new edition which contains a considerable amount of new matter, especially in the section dealing with the viruses, whilst in other respects the book has undergone many modifications. The authors, wisely we think, have abandoned any attempt to provide a full bibliography and have contented themselves with giving references to the more important recent work and to classical papers; even so the bibliography occupies 35 pages.

The general characters of this book, which has so faithfully served the requirements of many generations of students and bacteriologists both at home and abroad, are so well known that it is unnecessary to restate them. Without being stimulating, or indeed even exactly pleasing to read, "Muir and Ritchie" has always been an accurate, wholly reliable, and competent work. It is remarkable how little information of value has escaped inclusion, which says a great deal for the care and judgment with which the material has been chosen. Almost the only point open to criticism that we have noted is that methods occupy as much as 120 pages—i.e., between one-sixth and one-seventh of the subject matter; in order to reduce this proportion, instruction on subjects such as section cutting and the use of the microtome might be left to the many excellent technical manuals or works on histology. It is curious that the old Sachs-Georgi should be the only flocculation test for syphilis described, for this test, though of historical interest, is nowadays not widely used. The illustrations are good and some of the photographic ones exceedingly good, but it is a pity that the publishers cannot include their colour plates in the text.

The Science of Signs and Symptoms.

By Robert John Stewart McDowall, D.Sc., Professor of Physiology, King's College, London. London: William Heinemann, Ltd. 1931. Pp. 440. 21s.

This book is an enlarged and altered edition, under an altered and perhaps less happy title, of the author's "Clinical Physiology," already well known in this country and abroad. Any rigid separation of physiology from the practice of medicine and surgery must ultimately be to the detriment of both, and attempts such as this one to bring the two into closer contact is welcome. Prof. McDowall will earn the thanks of practitioners who read his book, and his reward will be their added interest in the everyday signs and symptoms met with in the course of their work. For the contents will undoubtedly stimulate the reader to think—and perhaps argue—about many things which he has hitherto taken for granted or not bothered to inquire into. Its scope is large, and some parts of the subject are treated somewhat superficially. In places the meaning is difficult to follow. but for the most part the style is clear and emphatic, particularly in the chapters on the nervous system, respiration, and digestion.

We can heartily recommend the book as offering not only practical assistance in the understanding of disease but a stimulus to greater interest in physiological principles.

A Text-book of Pathology.

Fifteenth edition. By Francis Delafield, M.D., LL.D., and T. Mitchell Prudden, M.D., LL.D. Revised by Francis Carter Wood, M.D., Director of the Pathological Department, St. Luke's Hospital, New York; Director of the Institute of Cancer Research, Columbia University, New York. Edinburgh: E. and S. Livingstone. 1931. Pp. 1339. 55s.

This text-book of pathology, now in its fifteenth edition and sixtieth year, has never so far as we are able to ascertain achieved the same degree of popularity in this country as it has evidently enjoyed in America. It is a book written on conventional morphological lines, bearing some resemblance to Coats's pathology, which was familiar to students of a generation ago. In this edition there are still many survivals from an earlier stage in the evolution of pathology that might well have been omitted and many diffuse and indefinite statements which give rise to the suspicion that the author has not clarified his ideas upon the processes he describes. For example, the heading arterio-sclerosis (chronic arteritis) suffices for the whole gamut of conditions, such as atheroma, endarteritis obliterans, medial hypertrophy, Mönckeberg's sclerosis, and, apparently, syphilitic aortitis (since the Fig. 391, if it represents anything, shows syphilitic mesaortitis associated with a plaque of atheroma). To take one paragraph from this section of the book ". . . in the smaller vessels arterio-sclerosis may lead to extreme narrowing or occlusion of the lumen. When this does not occur, and especially in the medium-sized arteries, since the new tissue is less elastic than normal and liable to yield to the pressure of the blood, the lumen may in places be dilated (Fig. 392) or the wall may rupture.

In this way aneurysms may form." It is difficult to know what the student is intended to gather from this statement, or to reconcile it with what is known of the causation of aneurysm. Incidentally, Figs. 384 and 385 both bear the legend "Chronic arteritis—arterio-sclerosis—obliterating endarteritis," whereas in this country the one would be classified as atheroma and the other as endarteritis obliterans.

A similar lack of definition in the presentation confronts us when we turn to nephritis. Here we have nephritides (lesions in which inflammatory phenomena predominate) and nephroses (lesions in which the degenerative phenomena predominate), and yet under nephritides we find suppurative nephritis, acute diffuse nephritis, and chronic nephritis, the latter being subdivided into a vascular subgroup containing (*a*) arterio-sclerotic contracted kidney, and (*b*) a combined type or true contracted kidney, and a second subgroup of an inflammatory and degenerative type of chronic nephritis containing (*a*) a parenchymatous type of chronic nephritis, and (*b*) interstitial type of chronic nephritis. In the face of this galaxy of nephritides it is difficult to understand the reason for the existence of nephroses. These latter (we are told) are "lesions of the kidney in which the degenerative processes predominate." When we turn to these—after comprehending that the widespread web which embraces all the above-mentioned types of renal change has caught up only inflammatory conditions—we find that the histological changes in the nephroses may be considered under the heads of cloudy swelling, extensive cellular changes, reaction in the vascular connective tissue ("inflammation is evident in the interstitial tissue, and a few glomeruli may show a capsular hyperplasia and ultimately atrophy of the tuft"), and a stage of repair. And to add to this inferno of confusion amyloid change is also included under this heading. Of course, it is not wholly the authors' fault. They are in the best of company, and no doubt feel it incumbent upon them to find room for all views. It is the curse of renal pathology that it is still regarded as fair game for the systematist, whilst it exercises, for all claimants to any form of pathological knowledge, a fascination whose intensity is in inverse ratio to the experience possessed. No one suffers except the student, and even for him there is usually grace, for few examiners nowadays will risk a question in this most distressful subject.

Diabetes.

Its Control by the Individual and the State. Harvard Health Talks, No. 18. By ELLIOTT P. JOSLIN, M.D. London: Humphrey Milford, Oxford University Press. 1931. *Pp.* 70. 6*s*.

Diabetes mellitus is a disease which is increasing at the present time, and it now ranks ninth or tenth in the U.S.A. mortality tables. Little attention to the control of this disease is being given by individuals, and none by boards of health. Prof. Joslin, who has taught us much about diabetes, and has helped greatly to improve the treatment, is a most suitable person to give one of the Harvard Health Talks, presented as public lectures in the medical school, of which this is the eighteenth, to be published in volume form. The facts about diabetes and insulin, and the importance of diet, are given simply. The importance of the intelligent participation in the treatment by the patient or his attendants is stressed and a new way of spreading the gospel is described. "Wandering diabetic nurses" travel up and down the State of Massachusetts and visit patients in their homes; they advise about diet, and see that the doctor's instructions are being carried out. They work in collaboration with the local doctor, and help to spread up-to-date knowledge on diet and insulin. It is hoped at a later date to create diabetes centres in different parts of the State, where the doctor can send patients for estimations of blood-sugar, or send samples of their blood. At these centres a diabetic nurse will be available to advise about diets. The value of a well-trained dietetian, working in the out-patient department of a hospital is great, and Prof. Joslin's scheme is a good one, especially if the local doctors will coöperate.

He gives advice on the preventive aspect—namely, on the desirability of avoiding obesity, in order to maintain health and prevent the onset of diabetes. In his view two diabetics should not marry and have children, but the marriage of one diabetic, provided that the partner is aware of the dangers, is allowable.

Hydrogen Ions.

Their Determination and Importance in Pure and Industrial Chemistry. Second edition, revised and enlarged. By HUBERT T. S. BRITTON, D.Sc.Lond., B.Sc. Bristol, D.I.C., F.I.C., Lecturer in Physical Chemistry, University College of the South-West of England, Exeter. London: Chapman and Hall. 1932. Pp. 589. 25*s*.

SOME knowledge of the measurement and theory of hydrogen-ion concentration is nowadays an important part of many branches of science and industry, and in this book the author has succeeded in giving a straightforward account of hydrogen ions and their place in pure chemistry and in technical and industrial processes. The book is not merely a technical handbook. Its first half is concerned solely with the theory and practice of electrometric and colorimetric methods for the determination of hydrogen ions, and with the various types of half-elements and electrodes used in these measurements.

Some 50 pages are then devoted to the principles of volumetric analysis, including the nature of titration curves, with several examples showing the calculation from these of dissociation constants of acids and bases of various types. The dissociation of ampholytes and the "zwitterion" theory of Bjerrum are simply and clearly explained in this section. In the present edition this account is followed by a chapter giving a satisfactory introduction to recent theories of electrolytic solution, as far as they are involved in the study of the activity of hydrogen ions. The Debye-Hückel Lewis theory of electrolytes is accorded some 20 pages, and the biologically important question of the effect of salt concentration on dissociation of acids and bases is briefly discussed in the light of the activity theory. The author points out the difficulties in the way of defining electrode potentials in terms of activities of ions in view of the fact that no method exists for the determination of single ion activity. Throughout the book he adopts the policy of interpreting electrode potentials in terms of concentrations rather than of activities. In the present state of our knowledge of the theory of solutions, the tendency seems to be definitely in the direction of activities; but for most practical purposes it is not essential to make the distinction, and the idea of concentrations is probably still the more familiar one to the majority of readers. A comprehensive selection of buffer solutions is then described, including some useful "universal" buffer mixtures covering a very wide range of pH. Colorimetric methods of pH measurement have nearly 60 pages to themselves and this part of the book closes with full descriptions of the preparation of a number of indicator solutions for use in these methods.

The above occupies one-half of the total number of pages and constitutes a self-contained and concise, yet thorough, survey of the whole field. It is followed by the more special sections, of which five chapters are devoted to the importance of hydrogen-ion concentration in inorganic chemistry, more particularly in the precipitation of inorganic salts. It is in this field particularly that Dr. Britton has made many important contributions. The chapters dealing with the precipitation of phosphates and carbonates will be of special interest to medical readers.

The Mastery of Sex

Through Psychology and Religion. By LESLIE D. WEATHERHEAD, M.A. Assisted by Dr. MARION GREAVES. London: Student Christian Movement Press. 1931. Pp. 249. 5*s.*

THE object of this book is to dispel the Victorian gloom and terror which has enveloped the problems of sex. Briefly, the thesis is to bring to bear upon the problems of sex such psychological discoveries, particularly in the field of psychopathology, as will help the layman to understand the sexual problems of adolescence and married life.

Mr. Weatherhead and Dr. Greaves do not, however, go the whole way on the road of psychological advancement; they pause to examine the psychological theories of sex in the light of current morality, and rest their views upon a broad Christian basis. The book deals with such human problems as silence and ignorance, comradeship and flirting, birth control, unhappy marriages, and the various disorders of sex life and the relationship of sex to society. The final chapter deals with healthy-mindedness, and the appendix with an outline of the physical facts, a knowledge of which is deemed necessary to happy marriage. While the book is full of interesting information and useful advice, one has the constant impression that while the author accepts the findings of modern psychology he feels under some restraint. He himself would probably be the last to admit this restraint on the grounds that the fundamental tenets of religion are prior to psychology and that all human actions must, in the final reduction, rest upon religious faith. The result is that there is a constant qualification of psychological opinion, and the book is in some danger of giving a false and faulty shelter to those who have the symptoms of a disordered sexual life.

NEW INVENTIONS

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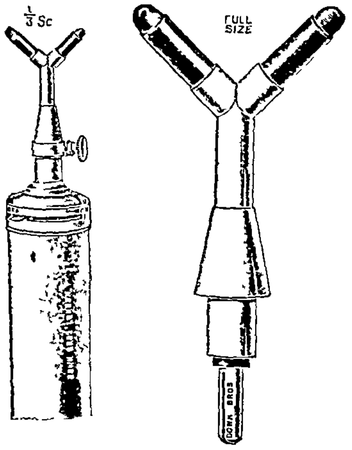

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H. WOLFE CORNER, M.D.

Maida Vale Hospital, W.

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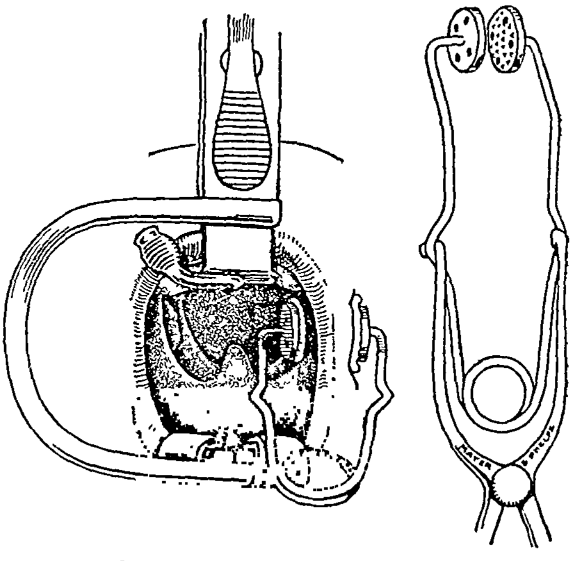

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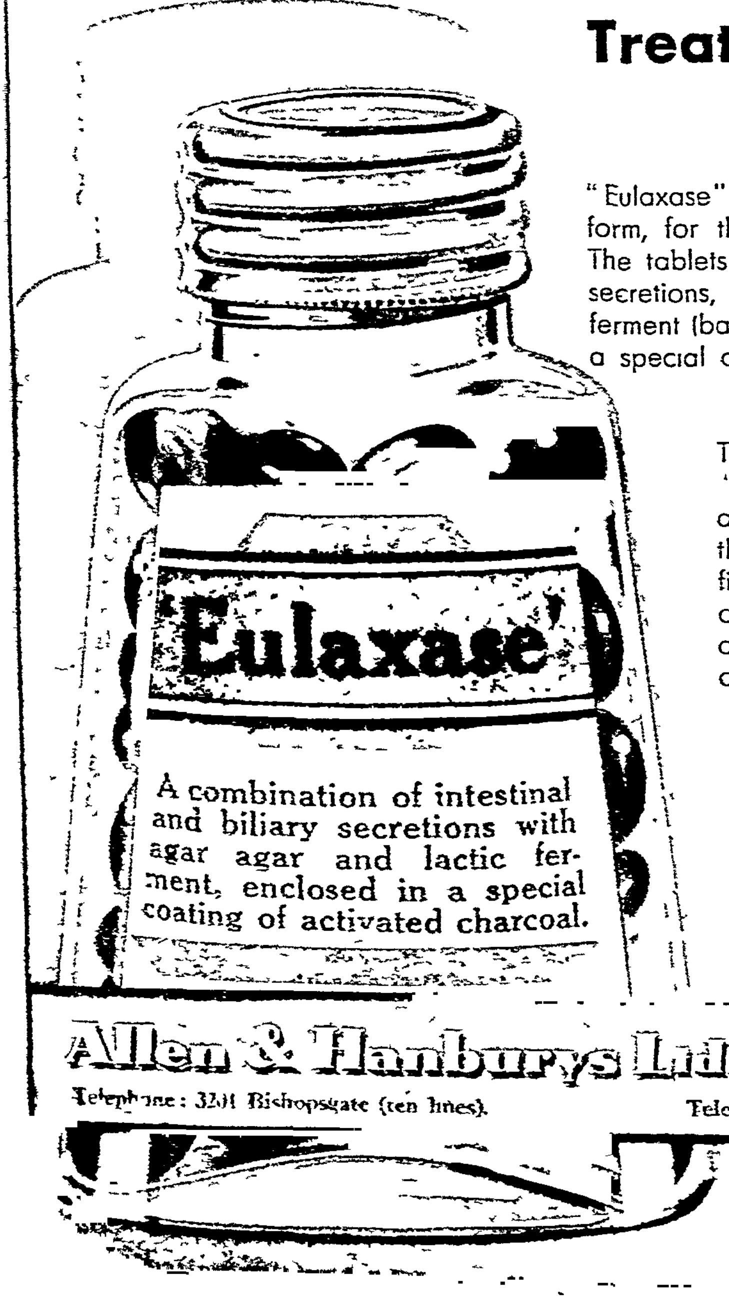
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[*See also* pp. 11, 28, & 29.

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THE LANCET.

LONDON: SATURDAY, APRIL 2, 1932.

BRIGHTON'S HOSPITAL SERVICES.

THE British Medical Association recently complained of the inactivity of its branches and divisions in connexion with those local hospital services which were affected by the Local Government Act of 1929. Most of them, it was said, had failed to place the competent local authorities and voluntary hospitals consultative councils in possession of their views upon such matters as the best use of the existing council and voluntary hospital accommodation, whether additions to it are desirable, and what form those additions should take. Prominent among the three or four bodies exempted from this criticism was the Brighton division, which at an early date appointed a hospital committee to consider the whole subject. The proposals of the committee have now been adopted by the local medical profession and have been issued in pamphlet form for the consideration of expert and layman alike.[1]

The memorandum, which is a very thorough piece of work, is based upon the presumption that at all events in a great town like Brighton, with a high rateable value, the hospitals of the local authority will come into sharp competition with the voluntary institutions. In such communities the councils are able to obtain the best medical and surgical skill and to provide the newest and most costly equipment. If the voluntary hospitals are to retain their prestige, and to continue to offer an acceptable contribution to the public need, the committee believe that, while making the position of the visiting medical staffs financially attractive, they will be obliged to coöperate for the provision of the necessary equipment. This means that they must adjust themselves to new conditions which are hardly, as yet, in full working force. After a full review of the local circumstances, the main conclusion of the committee, accepted by the regional medical profession, is that the ultimate needs of Brighton, Hove, and the district would best be met by one general hospital, comprising all branches of medicine and surgery, and that this ideal should be impressed upon the governing bodies contemplating enlargement of their institutions. All fresh accommodation should be provided by building on sites provided at this general hospital, to which all the other hospitals in the district should be affiliated. Existing special hospitals should be either retained temporarily in their present form or used as recovery homes, for private patients, as local medical centres, or as "home hospitals," or any combination of these purposes or, if need be, sold. The medical centres would relieve the out-patient departments and allow of the continuation of the treatment of patients, on leaving the hospital, by their own doctor; the "home hospitals" would be for persons who, not necessarily on account of their means, were unfavourably situated as regards domestic accommodation in illness. It is cogently pointed out that the use of some of the existing hospitals as recovery homes would set free beds in the general hospital required for acute cases—at present in the Brighton district from ten days to three months are needed to remove a patient from the waiting-list. Thus, members of the visiting medical staff would retain their patients under their care until they could go to a convalescent home or were able to return home. The importance of these proposals is obvious. To retain a patient until he is entirely fit to be discharged from medical care may be a waste of beds, money, and energy; a stage comes, generally speaking, when both the patient and the hospital will benefit by his removal to a convalescent or recovery home. Another important recommendation is that when the time arrives for the creation of the proposed general hospital the county and county borough councils should coöperate in its formation. This is in accord with the suggestion of the memorandum on relations between voluntary hospitals and municipal hospitals, issued by King Edward's Fund, that where urgent needs are unsupplied the local authority should consider whether they can best be provided by the municipal or the voluntary hospital. The dominant notes of the memorandum are, indeed, the imperative need of concentrating the work of the voluntary hospitals and of friendly coöperation with the council institutions.

Any review of hospital work and needs at the present time must take serious account of the alarming and unmanageable increase in the number of out-patients, a growth often synonymous with abuse. The out-patient department is a necessary and valuable part of the hospital system, but what should be its primary object, consultation, has, in great measure, been lost sight of. The Brighton memorandum speaks with decision on the subject. Much of the work is said to be unnecessary and wasteful of money, professional time, and skill; and the existing checks are regarded as insufficient. The reforms suggested are comprehensive. Save in cases of emergency, access to the out-patient department should be obtained only by a recommendation from a private practitioner, a provident or other dispensary, a public clinic, or a public assistance medical officer. Only such treatment should be given as cannot, in the best interests of the patient, be obtained elsewhere under the usual arrangements as between doctor and patient, or under contract arrangement, and every case should be periodically reviewed. There is nothing here to limit the use of the out-patient department in cases where it is the obviously desirable resort, while the general practitioner would enjoy opportunities of consultation with the visiting staff which now are often hard to come by. There is much else of interest in a memorandum which, however closely it may come home to the medical profession, is also of concern to that wide public which at present is somewhat bewildered by changes vaguely understood and the implications of which are obscure. Its proposals are, indeed, avowedly submitted "to public bodies and public men and women interested in the subject." There will be differences of opinion, medical and lay, upon this or that recommendation the more especially since local circumstances vary, but, taken all round, it provides at least an interesting basis for argument and at best a foundation on which to build a coördinated hospital service that will eliminate wasteful overlapping and make the best use of skill and experience.

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[1] Memorandum Outlining Proposals for a General Hospital with its Allied Services for Brighton, Hove and District. Brighton: The Southern Publishing Co. 6d.

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CONCERNING OLD AGE.

Some ten years ago Sir Humphry Rolleston delivered the Linacre lecture at St. John's College, Cambridge, taking as his subject the medical aspects of old age, and the lecture has now become, by some revision and much addition, a volume in which the accepted information on longevity is passed in review, while the ancient and modern aspects of the problems associated with advanced years are set out for comparison.[1] The medical treatment of the aged is not considered save in this indirect manner, that a valuable chapter deals with the causes of old age, and where we know causes the processes of treatment may become logical. On the other hand, we may find that the causes withstand all treatment, and this in the nature of things will be the usual situation with the subjects of old age. And no practical hints can be drawn from the records of those who have achieved remarkable longevity, because in the first place the records are remarkably untrustworthy, and, secondly, the best documented examples passed their extended lives in such extremely varying manner that they can have followed no common recipe for lengthening their days on earth.

In a recent study of the problems of human longevity,[2] Raymond Pearl, in conjunction with T. Raenkham, approaches the subject from the standpoint of constitution: what organ systems are most resistant to the wear and tear of living? There has been no dearth of discussion of the diseases of senility, from the time of Hippocrates onwards, but a review of the literature produces very little from the medical statistical aspect, although the material for such study is not lacking. In the U.S. registration area between 1923 and 1927 there were, out of a total of nearly six million deaths, 85,000 recorded as of persons 90 or more years of age at the time of their death. This is a statistical sample of respectable size, but its value depends largely upon the accuracy of death registration at these advanced ages. With the coloured population the statistics are very inadequate; a large proportion of their deaths at these ages (about one-third) are debited to "old age" and "senility"; the proportion is, however, much lower for the white population (about 13 per cent.), and for this reason the authors have confined their attention mainly to the latter. When the organological distribution of mortality in this group is compared with that of adults in other age-groups, it appears that the circulatory system more often than any other part of the body sets the upper limit of the human life span. The general conclusion is that if this upper limit is ever to be materially extended it will be necessary for man to acquire a circulatory system organically superior to the one he now has—though it might be argued that a more likely solution lies in the reduction of the strains to which it is subjected. The mortality associated with the respiratory system presents a somewhat different picture, for the *percentage* of the total deaths is not appreciably different at ages of 90 years and upwards from its level at ages 60 to 64 years. Passing beyond the individual causes of death the authors make a broad division of the organ systems into two classes: (1) those coming into direct contact with the external environment—e.g., respiratory system, sex organs, alimentary tract; (2) those not coming into direct contact with the external environment—e.g., circulatory system, nervous system. There appears to be a steady *decrease* with advancing adult age of the percentage of total mortality due to the causes in group (1)—i.e., those directly in contact with the external environment—and a correlative increase of the total mortality due to causes in group (2), those not in direct contact with the external environment. This at first sight is rather a surprising conclusion, possibly not in keeping with the results of investigations of a different type—such, for instance, as the negative correlation shown to exist between temperature and respiratory mortality, appreciable for old people but not for young adults, though, it is true, these correlations have not been worked for the very aged.

Common custom is certainly to protect the old from external environment. Whether the small percentage of deaths at advanced ages from causes in which the organs in close contact with the environment are involved, is the result of such protection or of the "survival of the fittest" is a question that these statistics cannot answer. Those who feel strongly that normal old age or senescence is connected with absorption of toxins from the alimentary canal will find in them some support of their views.

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ORAL LESIONS AND THE DENTAL SURGEON.

The dental surgeon's preoccupation with the mouth puts him in a favourable position for observing lesions in that cavity in their early stage. He may often find himself consulted about complaints that are not dental in origin; or, on the other hand, he may easily see some condition, apparently trivial and quite unnoticed by the patient, which is none the less of grave significance. By tactfully suggesting the advisability of further examination, he may enable his patient to receive treatment at a time when it can still be useful.

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[1] Medical Aspects of Old Age. By Sir Humphry Rolleston. London: Macmillan and Co., Ltd. 1932. Pp. 205. 7s. 6d.

[2] Raymond Pearl and T. Raenkham: Studies on Human Longevity. V. Constitutional Factors in Mortality at Advanced Ages. Human Biology. February, 1932, vol. iv., No. 1.

Prof. W. Rankin,[1] in a paper on Oral Lesions the Dental Surgeon may First Observe, writes of the importance of the dental surgeon being familiar with pathological conditions in the mouth beyond those which are due to diseases of the teeth, and points the moral by describing cases where such familiarity has been valuable. He emphasises the need for training in general medicine, and wisely remarks that the wards of the general hospital can alone provide such experience. His ideal that the dentist should be a physician who has taken up the practice of dentistry is, as he regretfully admits, an ideal which may be long in realisation. Indeed it might be argued with some force that if dentistry were strictly a specialty of medicine, to be learned after medical qualification, then the dentist might prove to be deficient in the technical skill required for the complicated operations of dentistry. The manual dexterity needed is very considerable, and the training should begin early and be continuous if real craftsmanship is to be acquired. Thus the conflicting claims of technique and of judgment based on a broad general training in medicine are not easy to reconcile. It is perhaps not surprising that those dentists who conform to Prof. Rankin's ideal of being physicians practising dentistry should sometimes be better in judgment than in execution, just as those who are primarily craftsmen may sometimes take a narrow view of their specialty. But leaving this contentious question, there will be few who will dissent from the general propositions which Prof. Rankin lays down. The dental student ought to know something of all oral conditions, whatever their causation; not with a view to treatment, but so that he may recognise their nature and inform the patient that medical attention should be sought. The dental surgeon who recognised Koplik's spots in a child on the verge of returning to school would earn the gratitude of the parent and the school authorities; he should also be able to distinguish mumps from the swelling due to an impacted wisdom tooth; while even more important, again, is the recognition of early cancer of the buccal cavity.

The curriculum of general medicine in the various licensing bodies which confer a qualification in dentistry is on the whole adequate. But a curriculum may look well on paper and yet the teaching may be poor, and if the examination is not sufficiently strict the candidate may slip through with a very scanty knowledge of medicine. Those who are in close touch with the dental student realise that that part of his training at a general hospital often leaves much to be desired. It is useless to let him loose with the medical student; his training in medicine and surgery should be carefully framed so as to present these subjects in relation to his life-work as a dentist. This means special classes so that he will not be unduly troubled with what later may be of little practical use to him. Economic reasons make it unlikely that more than a trifling fraction of dentists can qualify both in medicine and dentistry, for this means extending their studies for a further three or four years. Any limitation in the time devoted to purely dental subjects in favour of medicine and surgery carries with it too grave a risk of impaired technical ability to be possible. It is therefore necessary that the training in medicine should be carried out in a skilful and purposive fashion, and directed always to the aim of making the dentist not only familiar with, but even expert in, all matters connected with the mouth. In a word, his knowledge of pathology should be oral rather than dental. And this is essentially the message of a paper appearing in the March number of the Journal of the Association of American Medical Colleges, written by Dr. F. T. van Beuren. The author, who is dean of Columbia University College, New York, goes very thoroughly into the scope and the limitations of dentistry, and comes to the conclusion that "there is so much specialty and so little medicine about dentistry" that to regard the practice as a medical specialty, like ophthalmology or otolaryngology, is not justifiable. He obviously feels that the policy of perfection would be for every dentist to be a fully qualified medical practitioner, but that the perfection could only be obtained at the expense of time that could be occupied in a more practical manner.

THE RED CROSS RHEUMATISM CLINIC.

The staff of the British Red Cross Society's Clinic for Rheumatism have reason to be proud of the work they are doing. The second annual report is encouraging with its tale of doubled attendances and effective treatment, and it is satisfactory to hear that a greater proportion of the patients come for advice at an early stage. None the less the number of advanced cases is still unduly large, and, this being so, the medical board can fairly be pleased with the following percentage analysis of immediate results in 500 consecutive cases: worse, 0·8; unchanged, 22·6; slightly improved, 16·2; greatly improved, 46·6; and cured, 13·8. Evening clinics are held, and of 2475 patients discharged during the year 40 per cent. of the men and 51 per cent. of the women were able to remain at work while under treatment. The board's report concludes with notes on research already published or in prospect. It is all of interest, but much of it could be done more conveniently, one would think, with the patient in a hospital bed, ten of which are now in fact assigned to the clinic by the London County Council. Investigators must naturally follow their own bent, but it is frankly disappointing to find little mention at present of inquiry into the physiotherapeutic methods which could be studied at Peto-place much better than elsewhere.

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[1] Brit. Dent. Jour., March 15th.

ANNOTATIONS

THE DIPHTHERIA CARRIER.

ACTIVE immunity to diphtheria results either from naturally acquired infections with strains of the *Corynebacterium diphtheriæ* or by the injection of suitable preparations of the toxin which this organism produces. Although most of the infected attain natural immunity by means of subclinical infections, some purchase it only at the price of a hazardous experience—an attack of clinical diphtheria. Those who become immune either as the result of subclinical infections or a clinical attack may continue to harbour the parasite. They become "healthy" or convalescent carriers and may constitute a danger to non-immunes. Amongst immunes the carrier can do no harm. It is clear, therefore, that the rational method of control of diphtheria consists not in the hunting out of carriers of the diphtheria bacillus and their segregation until such time as they can be shown to have attained bacteriological righteousness, but in the increase in the proportion of immunes in the *population by means of artificial active immunisation.* In certain cities of the United States of America—e.g., Auburn and Utica—diphtheria has been almost completely eliminated as the result of immunising some 70 per cent. of the child population between the ages of 5 and 9, and at least 30 per cent. of those below 5 years of age (League of Nations C.H., 1053, 1931). Nowhere in this country have these figures been approached. Hence, the control of diphtheria still necessitates the control of the carrier.

Dr. V. D. Allison[1] has recently described some advances in the isolation of the diphtheria bacillus and modifications in the technique of the virulence test which together permit of rapid differentiation between virulent and avirulent strains. He employs Allison and Ayling's modification of Douglas's tellurite-serum agar, the modification consisting in the addition of 0·05 per cent. of copper sulphate. This medium inhibits the growth of the great majority of commensal organisms, and the *proteus* group. As a result, the diphtheria bacillus is readily obtained in pure culture. By the use of pure instead of field cultures for the performance of the intradermal guinea-pig test it is possible to report as to the virulence or otherwise of the strain in 48 hours. With the older methods, from seven to ten days might be necessary. Apart from economy in media and laboratory animals—Dr. Allison is able to dispense with the control animal—the saving of time is of very great importance to the medical officer who seeks to control an institutional outbreak of diphtheria by means of a combination of the Schick test and virulence test as described by C. C. Okell, A. J. Eagleton, and R. A. O'Brien.[2] Prompt detection and segregation of the Schick-negative or immune carrier of virulent organisms, the real danger in an institutional outbreak, is thus made possible. The carrier may harbour the bacillus in nose or throat or in both situations. The throat carrier is readily cured by tonsillectomy; the nasal carrier may be difficult to deal with. Drs. F. H. Thomson and Elsie Mann, together with Mr. Humphrey Marriner, record[3] further progress in an investigation into the diphtheria carrier problem which has been proceeding at the North Eastern Hospital since 1924. In the earlier stages of the investigation it was found that 7·5 per cent. of diphtheria patients persisted as carriers for *at least 12 weeks.* As the result of the intensive treatment adopted, the percentage of carriers has been reduced to 2·6 per cent., or a third of what it originally had been. It was recognised that the clearance of the nasal carrier was the great problem. Great success is reported with these cases from the use of 30 per cent. Dimol snuff. Six insufflations daily were prescribed. It is recorded that of 200 carriers treated by this method 76 per cent. required only one course of treatment and 60·7 per cent. of these became negative within a week and continued negative for six weeks, bi-weekly cultures being made. At the end of that period they were discharged from *hospital. In the same series of 200 carriers,* 6 *per cent.* required a second course of snuff treatment; 4 per cent. failed to be cured by the removal of tonsils and adenoids, but subsequently cleared up with snuff. A further 4 per cent. were cured by a combination of snuff and an alkaline nasal douche containing equal parts of the bicarbonate, biborate, and chloride of sodium. In 2 per cent. of cases the snuff treatment failed and clearance was effected by the removal of tonsils and adenoids. The carrier condition proved intractable in 7 per cent. of cases. In every instance it was found either that some marked pathological condition of the nose was present, such as ethmoiditis, deflected septum, atrophic rhinitis, or an infected antrum, or that the general health was poor from some other cause, such as tuberculosis.

As the result of the experience obtained in the treatment of carriers it was resolved by the authors to apply the same methods to the convalescent case of diphtheria, in order to obviate, as far as possible, the chronic carrier condition. To this end, every patient who was found still to be harbouring the diphtheria bacillus at the end of four weeks after an attack of the disease was examined by the rhinologist, Mr. Marriner, and appropriate treatment, either by operation, insufflations, or nasal douching, or a combination of these methods, carried out. That these methods were really efficacious in reducing the numbers of those who became 12-week carriers to a third of the original percentage of 7·5, was demonstrated by comparing a series of diphtheria convalescents thus treated with a parallel series to whom no special methods to effect bacteriological clearance were applied. As to the real value of swabbing and the number of negative swabs to be demanded before the release of a diphtheria patient from hospital, opinion is divided. There is no evidence that the diphtheria return case rate, usually in the region of about 1 per cent., is affected one way or the other by the performance or omission of an elaborate ritual of *swabbing before discharge. One reason for this is* the intermittency of the carrier state. A series of 12 or more negative swabbings may be followed by a positive result. Most diphtheria patients become bacteriologically free by the time that they are clinically fit for discharge, and it is customary to be content with two negative swabbings from nose and throat prior to release. The exceptional case continues to carry particularly in the nose, and it is satisfactory to learn from this prolonged and laborious investigation the best methods of effecting clearance in such cases. It is to be hoped that with the extension of the practice of active immunisation the carrier will become of less and less account. In any case, nobody should be classed as a carrier until the organisms he harbours have been submitted to a virulence test.

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[1] L.C.C. Ann. Rept., 1930, vol. iv., pt. III. P. S. King and Son. No. 2877. 5s.

[2] THE LANCET, 1924, i., 800.

[3] L.C.C. Ann. Rept., vol. iv., pt. III.

DIABETES AND PREGNANCY.

THE association of pregnancy with diabetes was formerly very dangerous. Thus before the introduction of insulin, Whitridge Williams collected 66 cases in 18 of which the patient died during pregnancy, labour, or the puerperium—a mortality of 27 per cent. Though an extra risk remains, because obstetric complications are necessarily more alarming in the diabetic, the outlook may be said to have changed completely now that insulin has become available. Numerous series of reported cases support this contention. In 1928 A. L. Walker collected 19 insulin-treated cases, of which only one proved fatal, and here the patient had suffered from severe toxæmia. In the same year in our own columns N. M. Goodman showed how the condition could be treated successfully under unpromising conditions in general practice. Last July, in a discussion at the Royal Society of Medicine, Dame Louise McIlroy and colleagues[1] at the Royal Free Hospital communicated seven cases, with eight pregnancies, in all of which delivery was natural, and in seven of which the child was alive and of normal size. Sterilisation was not performed on any of these patients, but Dr. E. W. Skipper,[2] who described 18 cases treated with insulin at the London Hospital, advocated sterilisation on account of the difficulty of prognosis. The decision, he would agree, is not one to be lightly made, and, as we pointed out on a former occasion,[3] the operation should be done only at the explicit request of the patient and her husband.

One of the latest papers on the subject appears in the *Norsk Magasin for Laegevidenskaben* for January, where Dr. C. Bruusgaard reports 12 cases observed at a maternity hospital in Oslo in the course of the last 25 years. The fact that the combination of diabetes and pregnancy occurred only in 12 out of 30,000 to 40,000 confinements in this hospital shows how rare it is. Only one of the patients belonged to the pre-insulin period, and this was the only case that ended fatally. The ages of the women ranged from 22 to 44, and five of them were primiparæ. Labour itself was on the whole normal, not being longer nor more often complicated by post-partum hæmorrhage than in the average case, and the puerperium also seemed to be unaffected by the diabetes. This series, like others, thus indicates that the risks of pregnancy are not particularly serious for the mother. But at Oslo the child mortality was high, for of the 17 pregnancies of these 12 diabetics, as many as eight terminated in the death of the child. Even in comparatively slight cases of diabetes, Bruusgaard says, the sudden intra-uterine death of the child is apt to take place without any apparent provocation. In the more severe cases, the chief danger to the child is acidosis and hypoglycæmia, whose control is none too easy. As a rule, in Bruusgaard's opinion, considerable difficulty will be experienced in deciding whether or not to interfere in the case of the diabetic woman, be she already pregnant or liable to become so. At his hospital several women were sterilised by operation, and the time recommended for this operation is on the fourth or fifth day of the puerperium, when the uterus is still large, and laparotomy under local anæsthesia is comparatively safe and easy. Mr. Eardley Holland, in the discussion previously mentioned,[2] maintained that Cæsarean section under local anæsthesia is the proper procedure unless labour is likely to be abnormally easy, and he suggested that when delivery is natural sterilisation might be performed some weeks later.

NERVOUS REGULATION OF BLOOD PRESSURE.

AN interesting communication on the tone of the blood-pressure regulator and its relation to the parasympathetic and sympathetic nervous systems comes from Prof. H. E. Hering of Cologne.[1] Since the discovery of the "sinus nerve" and the establishment of its function to be fundamentally the same as the "aorta nerve"—namely, controller of the blood pressure—Hering has been able to demonstrate that the tone of the parasympathetic is activated reflexly by the tone of the blood-pressure regulator. An intimate connexion is thus demonstrated between the sympathetic tone and the parasympathetic tone, the connecting link being the blood-pressure regulator. Many previous researches have shown that the tone of the sympathetic system is a true coefficient of the blood pressure; accordingly the sympathetic tone is also a coefficient of the parasympathetic tone by means of the blood pressure and the blood-pressure regulator; in other words, the blood-pressure regulator not only maintains parasympathetic tone, but inhibits the sympathetic. This circle must also have a fourth coefficient which remains yet to be discovered and must be the coefficient of sympathetic tone. Turning to the action of the sympathetic tone-producing mechanism on the organ which it innervates, it is found that, as regards the blood pressure, the action of the sympathetic is diminished by the blood-pressure regulator in two ways—namely, by auto-limitation and by stimulation of the parasympathetic tone—and as a result of this double apposition the normal resting tone is preserved. This is recognised experimentally when the blood-pressure regulator is cut out and the effect on the heart, vessels, and blood pressure is observed. According to Hering, on cutting out the blood-pressure regulator in the dog, the blood pressure rises steeply to twice the original level; therefore the double check must normally reduce the pressure to half its would-be level. By observation of the relation of the slowing of the pulse-rate to the rise of blood pressure during growth, it was found in the new-born, who have no vagus tone, that the relation of pressure to pulse-rate was roughly 60 to 120; with growth the pressure rose at first quickly and then slowly till at middle age the reverse was observed—i.e., a blood pressure of roughly 120 and a pulse-rate of 60. If the tone of the autonomic system, sympathetic and parasympathetic, at rest is described as the "resting tone," then this can be disturbed by any system of innervation—e.g., reflexly from an end-organ—one system being stimulated and the other inhibited; Hering says he knows of no reflex whereby the two forms of tone are stimulated simultaneously. Equilibrium is apparently restored by the "resting tone" after the disturbance produced by stimuli such as organ reflexes. The fact that the parasympathetic tone depends on the sympathetic shows the conception of both vagus and sympathetic in a new light; changes in degree of the normal sympathetic must involve changes in degree of the parasympathetic. Since, however, with changes in sympathetic tension the auto-check previously described comes into action, it is questionable how much of the tone remains latent when the blood-pressure regulator is in action, as described above in the experiment on dogs. In order to discover whether the resting tone of the autonomic system is of vital importance, experiments were carried out on dogs, and it was found that any sudden destruction of the blood-pressure regulator was fatal, whereas if the operation was carried out in several stages life could be maintained.

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[1] Post-Grad. Med. Jour., 1931, vi., 159.
[2] Brit. Med. Jour., 1931, ii., 58.
[3] THE LANCET, 1928, ii., 881.

[1] Med. Klinik, 1931, xxvii., 1703.

ROYAL INSTITUTE OF PUBLIC HEALTH.

THIS Institute, of which Sir William Smith was founder and remained Principal until his death on March 17th, will hold its annual conference over Whitsuntide at Belfast, under the Presidency of Lord Londonderry. It will meet on Tuesday, May 10th, and the work of the sections will begin next day. The Section of State Medicine, besides addresses and papers, is to have discussions on the vital factor in nutrition (opened by Dr. Chalmers Watson), the organised treatment of cripples (Miss M. Forrester-Brown), and venereal diseases as a public health problem (Dr. David Lees). In the Section of Industrial Medicine, Sir Thomas Oliver will introduce the subject of the health of the industrial worker, and there will be many personal communications. The two principal subjects before the Section of Women and Children are rheumatism (Dr. Robert Marshall and others), and the prevention of maternal and infant mortality (Dame Louise McIlroy). The Section of Tuberculosis will also hold two full-dress discussions, one on the place of the dispensary and the home in treatment (Dr. C. O. S. Blyth Brooke), and the other on tuberculosis settlements (Sir Pendrill Varrier-Jones). In the Section of Pathology Dr. C. O. Stallybrass introduces a discussion on problems of immunisation, and Prof. J. W. Bigger, with others, will contribute to a symposium on *Brucella abortus* infection in Ireland. The usual receptions and ceremonies will be held in connexion with the meeting. Apart from visits of instruction to places in the locality there will be pleasant opportunities of seeing some of the beauties and marvels of Northern Ireland.

HOG'S STOMACH IN PERNICIOUS ANÆMIA.

HÆMATOLOGY to-day is as much concerned with the physiology of the gastro-intestinal tract as with that of the hæmopoietic system. All observations therefore relating to the interaction of digestion and hæmopoiesis are of importance. Castle and his co-workers [1] have shown that a deficiency of gastric secretion is responsible for the development of a large group of megalocytic hyperchromic anæmias, while Wilkinson and Sturgis and Isaacs have corroborated these findings by showing that stomach preparations are as effective as liver in the treatment of such anæmias. Since the mucosa of the stomach or the muscle administered alone was ineffective it appeared probable that Castle's intrinsic factor was present in the mucosa, and reacted with the extrinsic factor in the muscle protein to form the effective principle.[2] In our present issue we publish further observations by Dr. Wilkinson and Mr. Klein on the nature of the effective principle in whole stomach and its relation to that in liver. They conclude that the two are not identical, since they were unable to obtain effective stomach extracts by the methods used in the case of liver. Those used in ex
tion of zymase from yeast proved satisfac
Further, the stomach principle is destroyed
heating above 45° C., whereas, according to (
the liver principle is relatively heat stable.
observations are of great interest, but the aut
interpretation of their significance is perhaps
to question. They suggest that the active prin
in hog's stomach effective in pernicious anæm
an enzyme, acting on the protein in a normal
to produce a substance essential for hæmopo
They propose the name "hæmopoietin" for
enzyme which they suggest is allied to, if not iden
with, Castle's intrinsic factor. Stomach tissue t
fore contains both hæmopoietin and small quan
of "liver principle" made by the interaction
mortem) of hæmopoietin on the stomach mu
which thus acts as Castle's extrinsic factor.
authors recognise the difficulty of reconciling
hypothesis with Gänsslen's [3] observations on
value of parenteral stomach preparations.
adequacy of ordinary hospital diet to supply
extrinsic factor presupposed in the hypothesis m
also be questioned. It is clear that further
along the lines indicated by Wilkinson and Kle
needed before the exact relationship of ga
secretion and diet to hæmopoiesis is understood.

THE INCIDENCE AND SITUATION OF MYOCARDIAL INFARCTION.

A STUDY of cardiac infarction as seen in
consecutive necropsies has been made at the
Clinic by A. R. Barnes and R. G. Ball.[4] They
that when an infarct occurs in the left ventricl
it nearly always does, it usually occupies on
three situations, according to the distribution o
three main coronary branches which supply it
blood. One of these situations is the apex
anterior portion of the left ventricle and the ant
portion of the interventricular septum. Infa
here is due to the occlusion of the anterior descen
branch of the left coronary or more rarely of
main trunk, the infarcted area thus being some dist
from the site of the occlusion. The second com
site is the mid-portion of the ventricle in the re
of its left border, about midway between the
and base. Here the lesion is usually due to occl
of the circumflex branch of the left coronary.
third site, according to Barnes and Ball, is
overlooked. This is the posterior basal portio
the left ventricle, and the cause of the infar
occlusion of a branch, or of the main trunk, of the
coronary, or rarely of the left circumflex. In
1000 post-mortem examinations there was
evidence of infarction in about 5 per cent. A
majority of the patients were men, and a
70 per cent. of them were between 50 and 70 y
old. The figures given show that high blood pres
was by no means the rule in these patients; ne
theless cardiac hypertrophy was very com
though not invariable. Among 49 cases of infar
a definite occlusion of a main artery was foun
34, the anterior descending branch of the left coro
being involved most commonly. However, by ca
dissection in those cases where definite occlusion
not found, more or less complete obstruction of sm
vessels near the infarct was sometimes discove
the right coronary branches being slightly

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[1] Castle, W. B., Heath, C. W., and Strauss, M. B.: Amer. Jour. Med. Sci., 1931, clxxxii., 741.

[2] Sturgis, C. C., and Isaacs, R.: Jour. Amer. Med. Assoc., 1930, xcv., 585.

[3] Gänsslen, M.: Verhandl. d. Deut. Ges. f. inn. Med., xliii., 85.

[4] Amer. Jour. Med. Sci., February, 1932, p. 215.

often involved in this way than branches of the other main vessels. It is claimed therefore that the predominant rôle which tradition assigns to the anterior descending branch of the left coronary artery in the tragedy of coronary thrombosis is unwarranted, and that the right branch plays an almost equally important part. It is believed that the misconception arises out of the greater difficulty in dissecting adequately the tortuous right branches, and in opening them without dislodging a thrombus. Also it is asserted that infarction of the posterior wall of the ventricle will be found more often if this wall is carefully incised. The findings of these investigators, if confirmed, will destroy the claims of the anterior descending artery to be known as the "artery of sudden death," or "the artery of coronary occlusion."

MEDICAL TREATMENT OF CATARACT.

FROM time to time we hear of claims to restore the transparency of a partially opaque crystalline lens by means of medical as opposed to surgical treatment. The measures that have been advocated are, first, local application of a non-irritating nature—e.g., Dor's drops, containing compounds of iodine and calcium, and the calcium alkaline iodide ointment which had some vogue about eight years ago.[1] We hear little of this ointment now, and may conclude that it has not fulfilled the expectations that it at one time aroused. Secondly, there is the subconjunctival injections of some irritant such as cyanide of mercury with the object of causing hyperæmia of the ciliary body and so an alteration in the nutrition of the lens. Lieut-Colonel Henry Smith, of Indian fame, has long been an advocate of this treatment, which however is attended by pain so great that local anæsthesia is insufficient and morphia has to be used. In Smith's practice, nevertheless, a single subconjunctival injection of 20 minims of 1 in 5000 neutral cyanide of mercury is often sufficient to clear up an incipient opacity of the lens. But the loss of transparency thus overcome is not apparently associated with any definite opacities "beyond occasional black sand-like particles in the periphery in the early stages."[2] Without such definite opacities it is not usual to diagnose cataract at all.

Thirdly, there is the treatment advocated by Dr. A. E. Davis, of New York,[3] by injections of "lens antigen." The theory on which he works is that cataract is due to certain substances contained in the blood which are toxic to the lens alone (cataract patients are often quite healthy in all other respects). These toxins can be counteracted by the action of "antibodies" called forth by the injection into the system of a substance derived from the broken down lenses of animals—"lens antigen." The theory is so far plausible that it is widely admitted that the ordinary form of senile cataract is not a local disease but is probably dependent on some defect of general metabolism. Dr. Burdon Cooper, of Bath, who has for many years been working on the chemical changes involved in the cataractous process, is inclined to take this veiw.[4] In practice the treatment by daily subcutaneous injection is very prolonged and is apparently not without some risk of "anaphyllaxis" in case of intermission. On the other hand, according to Davis, the prospects of arrest or amelioration in early cases are good. Of 243 incipient subcapsular cataracts treated by him as many as 98, or 40 per cent., improved, and in an equal number of cases the process was arrested. To estimate the importance of these figures it would be necessary to compare them with untreated cases watched through equal periods of time.

Mr. W. S. Duke-Elder sums up the matter thus[5]:

> "It is true that in some early cases of acute cataract (true diabetic, traumatic), when the process has not progressed to actual coagulation of the proteins of the lens, transparency may be recovered by controlling the exciting conditions; it is also true that in all cataracts variations appear to occur due to changes in the fluid traffic and alterations in the refraction of the unstable lens; but it is as certainly true that an organic opacity once formed is immutable. Coagulation of protein is an irreversible chemical change."

It would perhaps shorten future controversy if the advocates of the medical treatment of cataract admit the soundness of the above dictum and if, on the other hand, their critics can give us a clinical test by which to distinguish those opacities which are merely temporary from those which are "organic." Meantime Mr. Duke-Elder's advice holds good, that while it is reasonable to attack and eliminate any exciting cause that is known or suspected, the only legitimate method of treatment is operative removal of the lens.

THE PSYCHIATRIC ASPECTS OF GASTRO-ENTEROLOGY.

OUR American colleagues give to the word "psychiatry" a wider significance than we do, as shown in an address to the American Gastro-Enterological Association by Dr. Adolf Meyer,[6] in which he discusses the relation between the part-function and the total-function of the patient as expressed in symptoms. Functional or structural stomach disturbance may result from local disorder, from the influence of other organ complexes, or from conditions of the personality functions. Thus arises the question of understanding what disturbances of the gastro-intestinal tract can be part of emotional states and topical experiences—mentally integrated processes calling for a knowledge of personality implications. Facts and situations are involved concerning which the student and physician should acquire as adequate training as about infections, poisons, and functional clashings or inhibitions, and Meyer believes that it is possible to understand the rôle of the so-called mental factor in the simpler and more easily managed conditions without going into problematic and protracted types of psychotherapeutic treatment. From his wide experience he is able to give practical advice to the physician on the elucidation of the patient's emotional difficulties. He gives a warning, for example, against precipitating antagonism by questions which the patient has to deny in order to save his face; one has to prepare the ground on which he can really find an incentive to seek aid, instead of blocking the way to further discussion. Here Meyer puts his finger upon the fact, already well known to those who are accustomed to investigate the mental difficulties of sick people, that some physicians have easy access to intimate histories that are a closed book to others. The physical examination of patients has been systematised so that the experience of ages is at the disposal of every student; on the other hand, the student or practitioner with the temperamental qualities that give insight into mental factors and facilitate their discovery has an initial advantage over his fellows which experience increases. Yet he would sometimes be tempted to yield up this advantage, for it carries with it the difficulty of conveying his findings to his colleagues or of having their significance recognised. Meyer's paper is an attempt to equalise matters and, in his own words, "to lead the physician who is almost exclusively taught to study parts of the organism and their functions to take an interest also in the total-function of the person."

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[1] See THE LANCET, 1924, i., 700.

[2] Trans. Ophthalmol. Soc., 1928, xlviii., 91.

[3] Ibid., 1925, xlv., 186; Amer. Med., 1932, xxxviii., 27.

[4] Doyne Memorial Lecture for 1922, Brit. Jour. Ophthalmol., 1922, vi., 410.

[5] Recent Advances in Ophthalmology. London. 1929, p. 299.

[6] Amer. Jour. of Surg., March, 1932, p. 504.

FLORENCE NIGHTINGALE'S LATER WORK.

THE energy with which Florence Nightingale carried through her plans for the reform of nursing in the British Army is the chief theme of her latest biographer.[1] Those acquainted with the comparatively cloistered life of nurses to-day will find it interesting to be reminded how fiercely the founder of modern nursing strove against the restrictions of life in a Victorian home. "To be nailed to a continuation and exaggeration of my present life," she wrote, "without hope of another, would be intolerable to me." Her sense of frustration expressed itself in low spirits and irritability, and the consternation provoked by these symptoms has been depicted elsewhere by Mr. Lytton Strachey, in the imagined comment of her friends: "What could be the matter with dear Flo?" By dwelling on early obstacles Miss Willis is able to show how powerful was the driving force with which Florence Nightingale launched herself into the field of reform when once the barriers were down. She draws a character full of vigour, ruthless to herself and others in her determination to accomplish the task of the moment, and with a grasp of practical detail almost passionate. "I think what I have felt most," she wrote at one point, ". . . is the not having one single person to give me one inspiring word or even one correct fact,"—rather as though she might have dispensed with the inspiration. The book is a complete biography, and Miss Willis makes some attempt to analyse the human and religious motives which lay at the root of so much activity; her conclusions are interesting since they have a bearing on the vocational attitude towards nursing at the present time. She considers that in a religious age only a religious motive could justify a young woman in breaking away from custom. "God had to be brought into it," Miss Willis writes; "His call alone could justify such unusual conduct." But she regards Florence Nightingale as having been essentially a free thinker who brought in God, unconsciously, as a figurehead, "because the impulse to do this or that . . . came with such overpowering strength that she could think of no other source than God from whom it could have come." Many will be found to combat this view of her character, but it is one which provides ample grounds for speculation; the book is written clearly and concisely, and well documented. Miss Willis, in a foreword, confesses to owing much to Sir Edward Cook's biography of Florence Nightingale.

HYPERGLYCÆMIA AND SKIN DISEASES.

A PAPER[1] by Prof. G. Rost, of Freiburg, read at the last annual meeting of the British Association of Dermatology and Syphilology, should be studied by all interested in the inter-relations of metabolism and dermatology. The author has a concise and simple style, and the reader will have no difficulty in appreciating the points raised and the difficulties encountered, even if he be lacking in both biochemical and dermatological knowledge. The method described for administering glucose in estimating tolerance (i.e., intravenously instead of by mouth), and the reasons for so doing, will arouse general attention. Rost states that he never found hyperglycæmia in acne, seborrhœic eczema, furunculosis and other pyodermias, toxic dermatitis, carcinoma, or tuberculosis cutis. The same is true of eczema in a general sense, though he qualifies this observation by advising that a tolerance test should always be done where eczema does not respond to ordinary treatment. On the other hand, he urges that every patient with intertriginous dermatitis should be submitted to the test, and mentions that cases of psoriasis often exhibit a "pathoglycæmic" curve. Hypoglycæmia, which is probably an equally important abnormality, is not infrequently associated with so-called "flexural dermatitis," and in practice it is found that this common symptom, especially in children, diminishes with an increased carbohydrate administration.

While admitting that hyperglycæmia is a rarity in urticaria P. Chevalier[2] says he has tried insulin empirically in a case of apparently incurable chronic urticaria with excellent results. The patient, a woman of 32, had suffered from the disease for five years, the attacks seeming especially to follow ingestion of fatty foods. Five units of insulin (Byla) were given subcutaneously night and morning, with a little sugar simultaneously, and after a few days there was complete cessation of the pruritus, no matter what foods were allowed. A slight recurrence, after taking greasy foods, also cleared up when a second and similar series of insulin injections was prescribed. Another young woman, afflicted since childhood with the same disease, appears to have been cured in eight days, but she too was subject to minor remissions. It cannot be supposed that every case of chronic urticaria will respond favourably to insulin injections any more than we should hope that other opotherapeutic remedies, such as thyroid, recommended in the past, will always prove successful. It is well known too that whole blood, milk, and other protein complexes producing a greater or lesser degree of "protein shock" will sometimes relieve the symptom. Chevalier does not state that any of these had been used in the two cases he reports. We are therefore left in doubt about his claims, and only record the treatment for possible trial in intractable cases.

WE regret to announce the death on Monday last of Dr. George M. Robertson, the distinguished psychiatrist and physician-superintendent of Morningside.

WE also have to record the death of Mr. Rushton Parker, professor of surgery in the University of Liverpool.

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[1] Florence Nightingale. By Irene Cooper Willis. London: George Allen and Unwin, Ltd. 1931. Pp. 255. 7s. 6d.

[1] Brit. Jour. Dermat. and Syph., 1932, xliv., 57.

[2] Paris Méd., 1932, No. 3, p. 54.

MOORFIELDS EYE HOSPITAL.—This institution (the Royal London Ophthalmic Hospital, City-road, E.C.) reports a surplus on last year's working of £285, notwithstanding that the increase of beds since 1930 from 122 to 152 had sent up the expenditure by £6500. This increase has been met by augmented income, chiefly from legacies. During the year £16,537 was raised for rebuilding the out-patients' department, and King Edward's Fund has made an offer on behalf of an anonymous donor of a pound for every pound up to £6000 for the building fund provided that the hospital can raise an additional £6000 before next August.

SPECIAL ARTICLES

EXTRA-CORPOREAL DEVELOPMENT OF HOOKWORMS.

By Clayton Lane, M.D. Lond.,
LIEUT.-COLONEL, I.M.S., RETD.

Seeing how high is the percentage of dwellers in the tropics which harbours hookworms and how great is the harm these parasites do, I have tried[*] to separate the factors which favour their extra-corporeal development.

The Need for Trapping Cultures.

The minimum, optimum, and maximum temperatures for this development have, I believe, been established since the observations of Lambinet and Bruns at the beginning of this century, some of the information indeed dating from Peroncito's work 20 years earlier. This belief is based on the fact that mere change in temperature can be imposed on eggs and larvæ *in conditions in which they remain* continuously visible. But when it is desired to determine certain of the physical conditions best suited for this development in nature, the opaque medium (soil or fæces) in which this is occurring precludes direct observation, and conclusions must be reached as inferences from the numbers of infective larvæ which are made visible both by being trapped as they escape from cultures and by being extracted by soakage from them.

Extraction has become a commonplace for all workers on hookworm infection, but the unescapable need to trap cultures (Lane, 1928), the extent to which larvæ may escape from them before extraction has been begun, has so generally escaped appreciation, and its implications have been so generally overlooked, that it is necessary again to stress its importance. In all cases considered below the number of eggs in the fæces used has been determined by D.C.F.F. (direct centrifugal floatation pushed to practical finality), using exactly 1 g. of fæces or an exactly obtained fraction of this if the number of eggs present made it advisable to do so. Seven days after setting for culture fæces containing 7668 eggs, 6370 emigrant infective larvæ were found trapped, and only 44 were then extracted. From another culture containing 10,230 eggs, 8130 larvæ emigrated and were trapped within seven days, and only 331 were then extracted. From two more, each containing 4880 eggs, 4740 larvæ escaped into the trap in one case and 2900 in the other, extraction then yielding 171 and exactly 600 respectively. From a fifth culture, containing 8300 eggs, 6890 larvæ had crept into the trap four days after the culture was prepared. Since extraction and extraction only has been the test used to determine the conditions in which development best occurs, its sole use in these instances would have held to be failures cultures which were *most successful; for a focus out* of which 144 of every 145 larvæ had migrated would have been reported as capable of doing little harm, whereas originally it had been most dangerous. As a contrast, in one of the cultures containing 4880 eggs, only 32 larvæ emigrated, and 463 remained to be extracted after seven days. Taking an average of 54 cultures which will shortly be considered, and in which the water content throughout varied within 10 per cent. only, 28·8 per cent. of the eggs set were accounted for as trapped larvæ, and 26·8 per cent. as extracted larvæ. In this relatively small series extraction missed more than half the larvæ which matured, while the individual differences of cultures have varied from almost complete emigration to complete failure to migrate. Migration has been the rule, and conclusions based on untrapped cultures which necessarily disregard migration have no exact value.

The Techniques.

CULTURE METHODS.

The culture methods have been fully described (Lane, 1928). Briefly, 4 g. of earth of a fixed texture and known water content were intimately mixed in a small Petri dish with 1 g. of fæces of known egg and water content, and a known quantity of water was added if desired. The water contents of earth and of fæces were taken as being shown by the loss of weight which occurred when the crucible containing them had stood for half an hour over a boiling water bath. All weighments and measurements were to within 0·01 g. or c.cm., and weighments were repeated at intervals to determine any change in water content. Each culture was trapped by being centred in a second rather larger Petri dish containing water, a clutch of three such trapped cultures was placed in a large water-containing Petri dish forming a common moat or trap, and this last was covered by an inverted Petri dish of the same size meeting it lip to lip and lined within on its flat surface with moist blotting paper. These covered clutches can be stacked above one another in an incubator, so saving space and expense, while in that case the wet and dry bulbs show that the atmosphere is almost saturated.

EFFICIENCY OF LARVAL TRAPS.

As measured by the number of larvæ found in the outer traps, the efficiency of the inner ones has in general been so great that escape from them has not always been tested. This was however done in 103 cases, and in them 806 of 47,998 larvæ which had migrated from the cultures (or 1·79 per cent.) were found in the outer traps. Since each outer trap normally captured escapes from three inner ones, it is not possible to say how many of these inner traps actually proved efficient; but taking those cases in which, while larvæ had entered the inner traps from the cultures, less than three had escaped from them into the outer one, not less than 67 of 103 traps were fully effective. In only two did the numbers of larvæ exceed the average, indicating that it was these two which made the average as high as it was. In view of this general efficiency it seems unreasonable not to seek in individual traps an explanation of their failure. Evidence of this became apparent only towards the end of the investigation. Thirteen larvæ lay at the top of a wisp of submerged cotton fibrils in a trap which contained 744 of them; the water in the trap, which had stood undisturbed for 40 days, was rather low; there were 29 larvæ in the outer trap. It seems fair to conclude that escape from a trap may be possible if larvæ can obtain a ladder to the surface and purchase to perforate the surface against its tension, and that in this case ascent took place from one fibril to another. Moreover, the metal stays which were designed to prevent larvæ from obtaining climbing and perforating purchase in full traps may well provide it when the surface level falls. Whatever may be the explanation of the unexpected finding of Africa (1931) that the corresponding stage of the rat strongyle, *Nippostrongylus muris*, can emerge on the outer wall of a water trap 5 cm. wide and 2 cm. deep, the conclusion formed after long watching of hookworm larvæ in an examination cell seems to preclude absolutely the possibility of their escape from a depth of clean water greater than their length of 0·6 mm. They have never been found in the inverted Petri dish which serves to cover the clutch of cultures.

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[*] The investigation occupied about four years until closed by ill-health. The work was done under grants renewed annually by the Royal Society and was carried out at the Royal Albert Dock Hospital by kind permission of the Seamen's Hospital Society, in a laboratory generously vacated by Dr. H. M. Hanschell, and on material courteously made available by the hospital staff and particularly by Drs. G. Carmichael Low and P. Manson-Bahr.

METHODS OF EXTRACTING LARVÆ.

As is well known all extraction methods are modifications of that of Looss (1911), who placed the material to be tested in a calico bag, hung this in water, and pipetted off the escaped larvæ after they had fallen to the bottom of the vessel. Baermann (1917) set the calico in a metal sieve standing in a water-filled funnel, and by later opening the pinchcock beneath drew off the larvæ which had fallen to the bottom. Cort et al. (1922) modified Baermann's method by using the water hot and by not completely submerging the material to be extracted. The writer (Lane, 1928) placed the small culture already mentioned within calico-lined wire gauze moulded inside a small Petri dish, filled this with water and stacked covered clutches of these within an incubator or on the bench. This procedure has the advantage of allowing many extractions to be carried out at the same time in an incubator at a fixed temperature. Since the procedure has these marked advantages of convenience a comparison of its effectiveness with that of Baermann is necessary.

RELATIVE EFFECTIVENESS OF BAERMANN'S AND LANE'S EXTRACTION METHODS.

Cort (1925) reported that in a considerable series of experiments his modification of Baermann's apparatus extracted between 50 and 60 per cent. of larvæ which had been added to a clay loam. Perhaps these figures mean averages. At all events they do not apply to all soils, since Hirst (1924) had already shown that efficiency of extraction by Baermann's apparatus varied with the nature of the soil. Thus, 3·4 to 20 per cent. of infective hookworm larvæ added to a soil from a laterite formation made up of ferruginous sand and clay were later extracted. The percentage extracted from fine sand was from 4 to 20, and from a gravelly loam containing much humus 82·5 to 84.

In the present investigation the matter was considered differently. Twenty-four of the cultures described were divided by eye into seemingly equal halves, and one half of each culture was extracted by Baermann's method and the other half by mine. The two tests were conducted side by side on the bench, since the Baermann apparatus was too big for the incubator; the temperature of the room lay between 45° F. and 63° F. From their respective half cultures my technique extracted a total of 3707 larvæ and Baermann's one of 2985. Such a method of comparison gives, however, undue weight to any heavily infected culture in which one technique has happened to produce better results than the other. The fairer method is to determine the percentage of the whole extraction which each method has effected from its own half of each culture. From these 24 halved cultures my extraction method collected an average of 55·3 per cent. and Baermann's 47·7 per cent. of the total recovery of larvæ. It was further found that in Baermann's method all larvæ were not necessarily collected by running out of the funnel the 16 c.cm. which filled the glass box used for examination. Emptying the funnel has added as much as a twelfth more, and it is not suggested that this is a maximum. Moreover, the impression has been gained that to tap on the funnel before opening the stopcock has lessened the likelihood of leaving larvæ behind. Presumably it activates them so that, as they wriggle, they slip down the walls. It will have been noted that the division, although apparently equal, was relatively roughly come by, and that the number of cultures was not great, but that neither technique showed a preponderatingly large total; so that the choice between the two may reasonably be held to depend on local convenience, particularly as this is affected by temperature and space. The present significance of this comparison lies in the fact that the writer's technique was used in all that follows, and that it is at least as reliable a means of extraction as is Baermann's.

RETARDED EXTRACTION OF LARVÆ.

Although it seems to be the invariable custom to carry on extraction for a few hours only, infective larvæ may in fact continue to be recovered for many days after cultures have been set for extraction as the following instances show. From a culture 54 days old which had contained 10,230 hookworm eggs, 851 infective larvæ were recovered within 24 hours of setting it for extraction, 269 larvæ between the second and ninth days, 3 in the next 24 hours, and 3 between the fiftieth and fifty-ninth days. From another culture extracts were still successful 45 days after extraction began. From a third, set for extraction when nine days old, the numbers of larvæ so recovered were 330 within 24 hours, 136 between two and four days, 8 between five and 19 days, and one between 20 and 29 days; extraction for 24 hours has revealed three-quarters or less of the total recovery. For this retardation two explanations seem possible: either development of all eggs is not simultaneous in such cultures, or infective larvæ may be imprisoned by some local condition when the culture is set in water for extraction. That in the depths of a large fæcal mass development was suspended, evidently from lack of oxygen, was shown by Looss (1911); but this explanation has little to support it in the case of shallow unsodden mixtures of earth and fæces, for air must readily penetrate them in consequence of the time and care taken in their preliminary mixing. This conclusion is strengthened by the high percentage of larvæ which may reach the infective stage and emigrate even within four days—as many as 83 per cent. of all eggs being so accounted for in an instance already quoted. Again, in setting cultures for extraction it has frequently happened that small particles have floated and could not be submerged even after crushing them with fine forceps, a condition evidently due to retention within them of some gas; and as long as this float has persisted it has been found that a few larvæ might continue to be extracted. It seems a requisite of complete extraction that water should extend through the whole mass, and this cannot be guaranteed unless there is complete submersion.

Temperature too may be important in extraction, as Cort and his colleagues held (1922). For instance, no larvæ left two cultures 24 hours old while they stood on the bench for extraction at a temperature between

4° C. and 16° C. After adding water at 38° C. and replacing them on the bench, 24 and 22 larvæ had been extracted at the next examination three days later. It seems fair to conclude that the increased activity which is brought about by heat enables larvæ to break away from restraining agents, or expands and expels retained gas which has been imprisoning them. Accordingly extraction was not subsequently considered complete unless cultures had been exposed in an incubator to a heat of 28° to 30° C., and attempts at obtaining complete submersion had succeeded.

Physical Conditions Best Suited for Development.

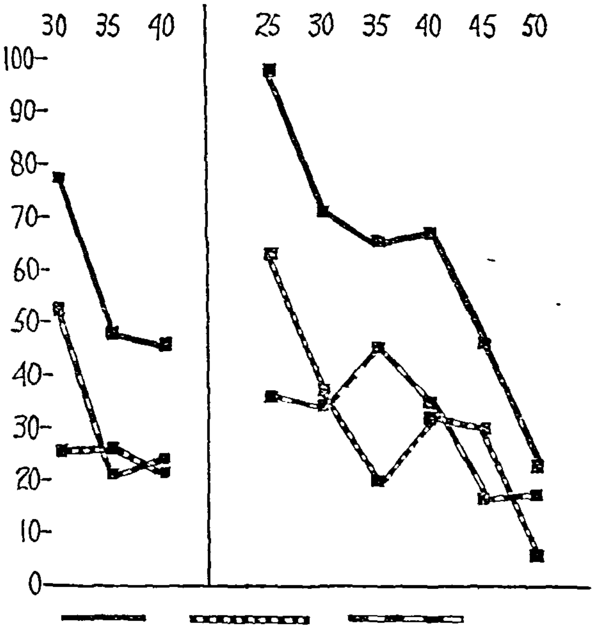
TEXTURE OF SOIL AND HOOKWORM INFECTION.

Stiles (1903) reported as finding in 1902 that in the United States hookworm disease affected dwellers over sand far more than those over clay, an observation since amply confirmed. Accordingly it seemed well to ascertain whether the size of soil particles influenced larval development in the cultures described. To do so the dried and powdered garden soil which for all other cultures had been passed through metal gauze with 25 meshes to the linear inch, was again sieved through metal gauze having 100 meshes to the linear inch. In this way there were obtained from the same material two soils differing only in texture (here referred to as fine and coarse), one containing all matter which passed through a sieve with 100 meshes to the inch, and the other all which passed through a sieve with 25 meshes but failed to pass that with 100. To draw fair conclusions from these two sets of cultures has had difficulties. In a batch of cultures containing the same earth, fæces, and water, it happens now and again that a clutch fails completely while others are successful; some unknown factor has intruded. In one instance two clutches, all containing coarse earth, completely failed, while two with fine earth produced plentiful larvæ. But it was clear from other clutches containing both fine and coarse cultures that so far as soil texture went this failure was fortuitous. Accordingly comparison has been restricted to cultures which have not only used the same fæces but which (when the same clutches have contained cultures with both textures of soil) have given results sufficiently parallel, in those using the same soil texture, for the conclusion to be drawn that some unknown factor has not been at work in them. Fourteen cultures of each type fall into this category, each pair being also comparable in all other known respects. From the 14 fine cultures 2382 larvæ in all were recovered, and from the coarse ones 2265. Fineness of soil particles with which fæces may be mixed (whether artificially or naturally, as by insects) does not then seem to be the essential factor which lessens hookworm infection in clay districts; while if not so mixed the texture of the underlying soil and of the still more distant subsoil can hardly affect development in an overlying fæcal mass. The explanation, it is suggested, is as follows. The general acceptance of a negative geotaxis, an instinct for upward climbing, in hookworms is based on an inadequate foundation, and where evidence has been sought it is against that conclusion. Thus, Sawyer, Sweet, and Shaw (1923) found larvæ 6 to 12 inches below a fouled spot in sand overlying a compact mixture of sand and clay; and in three of six examinations Korke too (1926) found larvæ 12 inches below a place of pollution. These are the only references discovered of attempts to determine on these lines whether downward progression occurs. Infective hookworm larvæ, it is here suggested, emigrate in all directions from a polluted spot just as do infective strongyloides larvæ (Fülleborn, 1924). In a sand or gravel district where resistance to progress is relatively easy, and thigmotropism therefore relatively unimportant, erratic wandering will finally bring many to the surface even if at first they pass downwards. In a clay district those that reach the subsoil will penetrate its fine interstices along which no through passage exists. Here their overwhelming thigmotactic instinct will keep most of them busy trying to penetrate it till they die safe away from the surface. The relative freedom of clay districts from hookworm infection will, then, be due to thigmotaxis associated with the absence of a negative geotaxis.

THE EFFECT OF WATER CONTENT.

Soil from a garden overlying the London clay when left to dry contained from 2·5 to 4·5 per cent. of water as measured by the loss of weight which occurred when heated for half an hour over a water-bath. Dust-dry soil which had passed through wire gauze with 100 meshes to the linear inch contained 3 per cent., while that fraction of the same soil which had passed through 25-mesh gauze contained 1·75 per cent. As has been reported (Lane, 1930), fæces have been shown to contain from 68 to 97 per cent. of water, and neither figure should be taken as defining limits, nor is the water content proportional to the physical consistency. The percentage of water in the selected mixture of four parts of earth and one of fæces has averaged 20·3 (19·2 to 21·25).

FIG. 1. FIG. 2.



Some effects of the water content of cultures on the development and migration of hookworm larvæ.—The vertical figures show the percentage of eggs, set for culture, accounted for as infective larvæ. The horizontal figures show the mean percentage of water which the cultures contained; in Fig. 1 this did not vary more than two and a half, in Fig. 2 more than 5 per cent. in either direction from that mean throughout the period between setting and extracting the cultures.

The manipulations described under cultural methods have been applied to 547 cultures and have entailed 2938 weighments to within 0·01 g., and a large number of measurements of water to within 0·01 c.cm., and the calculation of the percentage of water which nearly every measurement has implied. Many cultures have been of use rather to show points in which technique required alteration or directions likely to prove valuable for investigation than in leading directly to conclusions. But after means were discovered to keep the water content of cultures fairly steady, certain definite results emerged. Fig. 1 deals with 37 cultures in which the water content from beginning to end varied in each direction within 2½ per cent. of the mean indicated; Fig. 2 deals with 17 cultures in which it varied within 5 per cent. of the mean shown; and since these, too, are arranged to show variations of 5 per cent. of water, it is clear that except at the extremes of the scale each culture appears twice. The graphs show that within the limits of 25 and 50 per cent. of water, the less water there was, the more readily was development carried to the infective stage; while the relative percentages of larvæ migrating from cultures and of those remaining therein were too erratic to suggest that any lessons could confidently be drawn from the differences. It is noteworthy that in these cultures the number of larvæ which failed to migrate—which remained at what would have been in nature the infected spot—was 32 per cent.

Regarding consistence of the cultures, at the lower end of the scale they broke into rather large granules, but might be clayey at the angle between the side and bottom of the Petri dish; at the upper end the consistence was a moist clay, but the cultures were not submerged. With this particular mixture of earth and fæces, development occurred to the extent of 14 per cent. with a water content as high as 60 per cent., and so far as the few experiments went they indicated that the factor which limited development was submergence of the culture medium rather than its water content. At the other end the accompanying Table shows the amount of development which occurred when the percentage of water became low, the cultures having been set up before the means were devised of keeping it fairly constant. Notes made before extraction described these cultures as powdery, flaky, or granular. The Table brings out two points. The water content fell below 9 per cent. and the cultures became a coarse powder from which little success in extraction was expected, and yet in one case 57 per cent. of the eggs reached infectivity while the average was 30 per cent. The second point is that with the percentage of water so low as this little migration took place.

Table Showing Development of Infective Hookworm Larvæ in 4 to 1 Earth-Fæces Mixtures with a Low Water Content.

Percentage of water in culture on—			No. of eggs by D.C.F.F.	Percentage of eggs becoming infective larvæ by day 8 as shown by—		
Day 1.	Day 3, 4, or 6*	Day 8.		Trapping.	Extraction.	Total.
20·2	14·2 (3)	15·1	505	11·4†	77·0	88·4
20·2	16·0 (3)	15·1	505	11·4†	64·5	75·9
20·2	16·0 (3)	16·9	505	11·4†	55·3	66·7
21·2	17·9 (4)	18·75	391	0·25	21·2	21·45
21·2	15·3 (4)	19·6	391	0·0	50·7	50·7
21·2	15·3 (4)	16·2	391	0·0	4·9	4·9
21·25	9·0 (6)	10·9	209	0·0	8·1	8·1
28·4	8·8 (6)	10·7	209	0·0	57·0	57·0
28·4	11·8 (6)	28·4	209	0·0	49·8	49·8
21·0	13·2 (4)	14·1	209	0·0	25·8	25·8
19·6	8·6 (3)	18·1	79	5·1	8·9	14·0
19·6	9·9 (3)	14·7	79	2·5	19·0	21·5
19·6	8·4 (3)	14·6	79	3·8	29·1	32·9

* The day of intermediate weighment in brackets; on it, loss of weight was exactly made up by added water.

† An average; 230 larvæ escaped into a trap common to these three and a fourth culture.

Hygienic Implications.

Hygienic implications are these. It has been confidently assumed, and the assumption has led to most confident advice on the conduct of hookworm campaigns, that at certain seasons of the year in certain endemic localities, the condition of the soil is such that the possibility of reinfection must in practice be disregarded. These experiments indicate that in such dry surroundings infective larvæ are produced from about a third of the original number of eggs, and that almost all of these larvæ then remain at the infected spot. It is perhaps significant that, as noted above, it is almost exactly this percentage which failed to migrate in more favourable water conditions. Now the writer has for over 12 years (Lane, 1919) stressed his conviction that the acquisition of hookworm infection is essentially dejectional, acquired during defæcation at a "natural" or a man-made privy. It will hardly be disputed that in a dry locality such a latrine is likely to be one of its less dry spots, particularly among races where water is used to cleanse after defæcation. These experiments show that dryness has a strong action in limiting infection to the infected spot, and suggest that the liability to dejectional infection—the predominant type of infection—need not be materially lessened during dry seasons in endemic areas. There is certainly no justification for the common assumption to the contrary, and such mere guesses should no longer have pride of place in hookworm campaigns. In support of this conclusion two cultures not cited in the Table are noteworthy. From them 1420 and 831 larvæ escaped in the first 32 days, during which the water content had remained very close to 40 per cent. The number of eggs in each had been 2375. During the next fortnight they were neglected and became dry and friable, and only 26 and 1 larvæ were trapped. Yet on extraction of these dry, friable cultures, whose water contents were 12·4 and 9 per cent. respectively, there were recovered 279 and 214 larvæ which showed marked activity. A dry friable soil such as has been deemed harmless was in fact so dangerous that the amount of it which might have adhered to the sole of a foot after the wetting resulting from post-dejectional ablution, would have contained many hundreds of vigorous infective larvæ a month and a half after the original stool had been passed. Hookworm campaigns should not, on a priori grounds, be timed for certains seasons of the year. Whether or not the privies, or spots favoured for defæcation, can produce infective larvæ at all seasons of the year is a matter whose determination should at least be attempted locally. There should be no lighthearted assumption to the contrary.

These figures of the relation of water content to larval development apply only to mixtures of four parts of soil to one of fæces. It is not suggested that they define limits, nor are they likely to apply to mixtures in other proportions. Possibly they will not apply to all kinds of soil. In pure fæces development of infective larvæ has occurred with a water content maintained between 80 and 85 for four weeks. There is little exact knowledge on this matter.

Conclusions.

Investigation of 547 earth cultures has shown emphatically that emigration of infective hookworm larvæ from them is frequent and may be very great, and accordingly that the many conclusions regarding larval biology, including longevity, conclusions which are mainly based on untrapped cultures, rest on so precarious a basis that they certainly are far from exact; that properly constituted larval traps have a high efficiency, and that any failure presumably lies in the make-up of the individual trap; that there is a method of extracting larvæ, economical of space and allowing of this being done under exact conditions of temperature, which is not less efficient than that in general use; that to submit material to larval extraction for a few hours does not accurately measure its possible, perhaps not its momentary, infectivity; that the effects of texture of subsoil on the local prevalence of hookworm infection is reasonably explicable if hookworm larvæ migrate through soil and subsoil in all directions, and are without that negative geotaxis which is commonly postulated—it is believed incorrectly, and certainly not merely without adequate evidence, but against some that exists; that if it is as safe as it seems to generalise on over 50 cultures of a mixture of four parts of earth and one of fæces, conducted with close checking of the water content, larvæ develop best when this is as low as 25 per cent.; that even when in these conditions it falls as low as 9 per cent., and the culture is powdery, more than half the eggs may have developed into infective larvæ, and that these may be so vigorous as to constitute of such infected soil a spot of intense infectivity; that these dry conditions need not lessen the infectivity of an infected spot, though they may annul migration of larvæ from it; and that since infection in backward races is mainly dejectional, obtained during defæcation, drought need in no way lessen the infectivity of those spots which are favoured by and returned to by such people day after day for this purpose, especially if they wash the parts on the spot. There is then no present justification for assuming that in certain regions and at certain seasons the possibility of acquiring infection must be disregarded. It is wiser to find out and not to guess.

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OPHTHALMIC HOSPITALS.—Last year the Birmingham and Midland Eye Hospital received 1968 in-patients whose average length of stay was somewhat increased. The average weekly cost of each in-patient fell by 2*s.* 10*d.*, but in consequence of the longer stay the cost of treating each in-patient to a conclusion was 5*s.* 4*d.* more. There were 41,330 new out-patients, 22,021 of whom were casualty patients; 13,841 of them were attended for the removal of foreign bodies in the eye. The reduction of over 4500 in this type of case is considered to be indicative of the depressed state of industry. Excluding the casualties, the average cost of each out-patient was 5*s.* 4*d.* Spectacles were prescribed in 9436 cases. Mr. Jameson Evans, chairman of the medical board, states that the pioneer work of slit-lamp investigation and orthoptic treatment of squint, which has been carried on for some years, is showing "very valuable results" which it is hoped to publish in due course. He trusts that it may presently be possible to establish a research endowment fund.—Last year the Victoria Eye Hospital, Hereford, received 261 in-patients and treated over 3000 out-patients.

MEDICINE AND THE LAW.

Marriage Annulled for Lunacy.

ON March 21st Lord Merrivale granted a decree nisi of nullity on the ground that the respondent, at the time of the ceremony of his marriage, was insane and should not be bound by that ceremony. There were some indications, said Lord Merrivale, that the respondent had a vague idea about marriage; but he was not in a condition to carry out any responsible duty. He was in the hands of those who were about him; they thought the marriage was a good thing for him and carried on with it. He did mechanically the things which are done at a ceremony of marriage, but he was at that time insane. The test is whether a person has the mental capacity required to enter upon any responsibility—whether he has such mental capacity as enables him to bind himself to any obligation. If there is unsoundness of mind, is it such as to disable him from understanding the nature of the contract?

Though many reformers would desire to see the law so changed, lunacy occurring after marriage is no ground of divorce. In a leading case of 1885 the Earl of Durham sought to have his marriage annulled on the ground that his wife had been insane at the time of the marriage. He could show that she had since become insane, but the Court, after a patient examination of the evidence of several eminent doctors, came to the conclusion that the insanity had developed after marriage; his petition was therefore dismissed.

To marry a "lunatic so found by inquisition" was originally a contempt of court, punishable by imprisonment like any other form of contempt. In 1742 Parliament passed an Act to prevent the marriage of lunatics. "Whereas persons who have the misfortune to become lunatics"—so ran the preamble—"may by reason of such their disorder be liable to be surprised into unsuitable marriages which may be of pernicious consequence and a great misfortune to their families"; it was therefore enacted that a lunatic should not marry till declared of sane mind by the Lord Chancellor. This is still the law, by virtue of an Act of 1811. Some will wonder how these marriages are ever allowed to occur. Lord Merrivale directed in the recent case that the papers should be sent to the King's Proctor "for inquiries to be made, to secure that there was no departure from the ordinary course of justice." Instances of this kind may reinforce the demands of the eugenical reformers for some kind of check on the marriage of the unfit. A man cannot drive a motor-car without making a declaration of fitness: marriage may be undertaken without even this formality.

Workmen's Compensation—Delay in Claim.

Under Section 14 of the Workmen's Compensation Act the claim for compensation must be made within six months of the accident. It has been held that this condition is of substantial importance, and not a mere technicality. But the Act adds a proviso that failure to claim within the time limit is not to bar proceedings if the failure was occasioned by "mistake, absence from the United Kingdom, or other reasonable cause." Whether the facts amount to reasonable cause has been held to be a question of law which is open to review on appeal. If a workman honestly believes his accident is not serious, and if it turns out that this belief is mistaken, the Courts have accepted these circumstances as reasonable cause for the failure to claim.

On Feb. 20th, 1931, a Lancashire workman was hit in the eye by a chip of stone. He told a director of the employing company of his accident; he himself thought it was a trivial matter; so did the director. The workman had had bits of stone in his eye before without serious injury. His eye troubled him; he bathed it and wore a shade; but he managed to work to his employers' satisfaction. In April he went to his doctor, who said it was a case for specialist ophthalmic treatment, and gave him a note to take to an eye hospital; but the workman did not go. On May 23rd he was discharged owing to slack trade. In June he told a friend he had lost the sight of his left eye. He did not in fact lose it till August. After losing the sight of his eye, he made his claim for compensation. The County Court judge found that the failure to make the claim within six months was due to a reasonable cause. Although the workman's story in the witness box contained flagrant inconsistencies, it was entirely honest. The Court of Appeal has upheld the decision.

Posing as a Doctor.

Recent proceedings at Long Ashton police-court, near Bristol, reveal another instance of an unqualified man adopting the name of a medical practitioner and successfully posing as a qualified doctor.

Described as William Faulkner, alias Norman Nelson Kirkup, the accused was charged with posing as a Bachelor of Medicine between March and October, 1931, and with falsely using the title of Dr. Kirkup or Dr. Norman Nelson Kirkup, M.D., implying that he was recognised by law as a practitioner in medicine. The accused, who was extradited from Singapore on other charges, was stated by the prosecution to have adopted the name Norman Nelson Kirkup which was that of a medical practitioner at one time in Detroit. It was said that he applied for the post of assistant medical officer at the Bristol Mental Hospital, enclosing two references from Canada, where he said he was an M.C.P.S. He obtained the post, and for six months carried out his duties more or less successfully. Faulkner pleaded guilty to these two charges and was fined £20 on each. He was committed for trial on other charges of quite a different nature—bigamy and obtaining money by false pretences. In opening the case on the bigamy charge, the prosecution stated that Faulkner last year obtained a post as assistant medical officer in North Borneo with the British North Borneo Chartered Company; it was while going to take up that appointment that he was arrested. There was another charge against him for obtaining money from the company by representing himself to be a doctor and thus receiving money for outfit and salary. To these charges he pleaded not guilty; he has reserved his defence and stands committed for trial.

The fine of £20 imposed in respect of the charges to which Faulkner pleaded guilty is the maximum penalty under Section 40 of the Medical Act. In discussing a similar case recently, it was pointed out that the equivalent maximum penalty under the Dentists Act is £100. Some members of the public may not mind whether they are treated by the qualified or the unqualified; but, if a patient or an institution prefers a qualified practitioner, there must be no confusion as to which is which. The annoyance inflicted on a registered medical practitioner if his name and qualifications are coolly annexed by an impostor is a grievance to which Parliament might well pay attention. Two such cases have already been before the courts lately.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. G. A. S. Hamilton is placed on the retd. list.

Surg. Lt. C. N. H. Joynt is transferred to the permanent list.

ROYAL ARMY MEDICAL CORPS.

Maj. (temp. Lt.-Col.) A. Hendry to be Lt.-Col.

The undermentioned Lts. on prob. are restd. to the estabt.: L. T. Furnivall and J. K. Chappell.

The undermentioned to be Lts. (on prob.): H. J. R. Thorne (and is confirmed in his appt.), E. W. Gibbs, P. T. L. Day, and J. V. Quinn.

ARMY DENTAL CORPS.

Lt. G. E. Nettleship to be Capt.

ARMY RESERVE OF OFFICERS.

Lt.-Col. D. L. Harding, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Lt. J. T. McOuat to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Col. A. M. McIntosh (late R.A.M.C.), having attained the age limit, retires, and retains his rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

Majs. to be Lt.-Cols.: J. W. Jones, L. A. P. Anderson, W. C. Paton, J. B. Hance, H. K. Rowntree, B. F. Eminson, A. Kennedy, C. McIver, and J. C. John.

Lt.-Col. A. H. Napier retires.

HONORARY SURGEON TO THE KING.

Lt.-Col. & Bt. Col. P. H. Mitchiner, T.D., R.A.M.C. (T.A.), has been apptd. Hon. Surg. to the King, vice Col. R. E. Bickerton, D.S.O., T.D. (ret.).

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 19TH, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 61 (last week 76); scarlet fever, 1582; diphtheria, 811; enteric fever, 28; pneumonia (primary or influenzal), 1718; puerperal fever, 33; puerperal pyrexia, 113; cerebro-spinal fever, 56; acute polio-myelitis, 4; acute polio-encephalitis, 1; encephalitis lethargica, 11; dysentery, 17; and ophthalmia neonatorum, 97. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 22nd–23rd was as follows: Small-pox, 105 under treatment, 3 under observation (last week 110 and 6 respectively); scarlet fever, 1444; diphtheria, 1517; enteric fever, 9; measles, 2331; whooping-cough, 416; puerperal fever, 23 (plus 7 babies); encephalitis lethargic [illegible] 4; "other diseases," 182. At St. [illegible] ere were 10 babies (plus 6 mothers [illegible] natorum.

Deaths.—In 117 great towns, including London, there were no deaths from small-pox, 3 (1) from enteric fever, 116 (47) from measles, 5 (3) from scarlet fever, 56 (12) from whooping-cough, 21 (5) from diphtheria, 66 (22) from diarrhœa and enteritis under two years, and 230 (40) from influenza. The figures in parentheses are those for London itself.

The diminution in mortality from influenza continues: outside London the largest number of deaths (16) was reported from Bristol; there were 9 in Stoke-on-Trent, 8 each in Birmingham and Leicester, and 6 each in Sheffield and Croydon. Nine of the fatal cases of measles were assigned to West Ham, 8 to Manchester, 5 to Liverpool, and 4 each to Portsmouth and Leeds. Seven deaths from whooping-cough were recorded in Birmingham and 5 in Liverpool. Six of the deaths from diphtheria were in Hull.

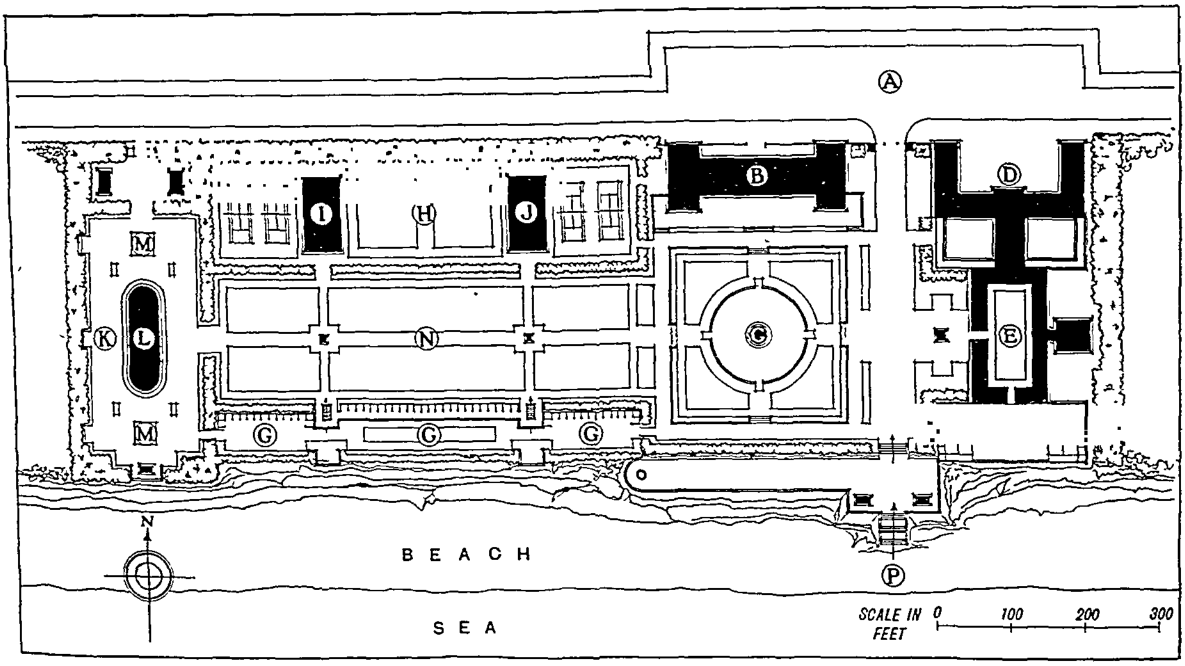
The number of stillbirths notified during the week was 291 (corresponding to a rate of 41 per 1000 total births), including 47 in London.

AN ALL-WEATHER HEALTH AND SOCIAL CENTRE FOR A SOUTH COAST RESORT.

By Marshall Sisson, A.R.I.B.A.

THE curative virtues of the British coast resorts are becoming more widely recognised, but in the opinion of many medical men the accommodation offered to invalids and holiday-makers for their treatment and recreation is not always sufficiently adapted to the climate. It is essential that visitors to the coast shall be able to enjoy the advantages of sea air, bathing, exercise and amusement under pleasant conditions at all seasons and in all weathers.

Some health resorts already possess admirable specific features, and others are now considering improvements; but, owing to a lack of forethought in planning in the past, the individual resources are often uncoördinated, with a consequent loss in amenity and convenience. Careful grouping of the scattered elements on a site reserved and previously planned to receive them would go far to supply any deficiences and to augment the advantages of a resort by forming a convenient health and social centre. There would be in a garden setting a restaurant pavilion and bandstand, a medical bathing establishment, a swimming-bath and sheltered area for sunbathing, covered shelters and quiet retreats for invalids, indoor tennis-courts and bowling-greens, and a separate playground for children. Such a centre should be readily accessible, close to the seashore, open to the sun, and screened from cold winds.



Plan of the Centre. A, main entrance; B, restaurant pavilion; C, bandstand; D, medical baths; E, swimming-bath; F, sunbathing area; G, sunk gardens and shelters for invalids; H, tennis-courts and bowling-greens; I, covered tennis-court; J, covered bowling-green; K, children's playground; L, covered playground; M, paddling pools; N, ornamental garden; P, way down to beach.

The accompanying diagrammatic plan has been devised to show how these various elements might be combined in one comprehensive scheme. For the purpose of demonstration, a site of about ten acres, close to the seashore, has been assumed. In any actual circumstances the lay-out would necessarily be influenced by the nature of the site and the particular requirements of the locality.

The buildings provided have been arranged in a garden setting, accessible from the town and from the beach, and terraced and planted so as to give views of the sea and shelter from the north. The gardens might be screened with plantations and thick masses of shrubs as these would probably grow better near the sea than larger trees. The restaurant pavilion (B), next to the main entrance to the gardens, commands a view of the sea. This block might contain, in addition to a restaurant, dancing, reading, and card rooms, and possibly a concert room. In fine weather the terrace outside would be used as a café. In front of the restaurant is a bandstand (C), set in the centre of a sunk area surrounded by covered shelters designed to accommodate a large audience in showery weather. At the east end of the site, and approached directly from the road as well as from the gardens, is the medical bath unit (D). This might contain: Turkish baths; vapour and switching room; douches and hot-air appliances; whirlpool baths; sedative pool; dry inhalation room; radiation and manipulation room; slipper baths for effervescent, foam, aerated, hot salt, and seaweed treatment; gymnasium; and consulting and waiting-rooms. Adjacent to the medical bath building is a covered swimming-bath (E) and on the south side of this, next to the sea, a sheltered space for sun and air bathing (F). The swimming bath might be made more attractive by the provision of a modification of the artificial wave mechanism which has proved very popular in various continental baths but has not yet been installed in this country.

Covered shelters to accommodate a large number of invalids and others are provided in a secluded position next the shore. These shelters, facing south, are arranged in sunk gardens (G) so as to be screened from all winds, those from the sea being excluded by banks and hedges. A pool to reflect rays and sloping approaches for wheeled chairs are suggested. The northern part of the garden contains tennis-courts and bowling-greens, both open and covered (H, I, J). At the west end of the site is a playground for children (K), with a separate entrance from the road. This section contains a large playing shed (L) and paddling pools (M). Separate cloakrooms and hot foot-baths for use after paddling would be provided near the entrance. In addition to these more important elements, attractive kiosks for the sale of papers, flowers, milk, tobacco, and confectionery, might be incorporated at suitable places in the grounds.

The buildings included in such a scheme should be simple in character and light and economical in construction. Much of the architectural effect would depend on their relation to one another and to the garden setting. A judicious use might be made of colour-wash, which could easily be renewed so as to keep the buildings fresh and gay.

Unfortunately, most seaside resorts do not provide a clean slate for the planning of a comprehensive scheme of this kind, but in many cases where some of the constituent parts already exist, complementary ones might be added in close relation to these so as to remedy deficiencies and produce a complete and coherent whole.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

INSURANCE PRACTICE.

NEW regulations on club-practice have lately been issued by the government, with the agreement of the association of sick-clubs (Krankenkassen) and of the Hartmannbund on behalf of the medical profession. The principal points are that a medical man wishing to engage in club-practice must enter his name in a register to be kept by the district insurance office. Only German medical men who have been qualified at least two years are entitled to registration, and there is to be one doctor for every 600 club members. No medical man who receives a fixed salary of 500 M. a month or more from the government or from a private company or association may have his name on the club register. Married medical women enjoy the same privileges as the unmarried, and practitioners may not be denied registration because they are married, nor because they describe themselves as homœopaths. Those who took part in the war, and especially those who were disabled or who suffered exile from the territories formerly belonging to Germany, enjoy preference over other candidates, and so do those who have already lived for a long time in the locality. Special items concern the registration of specialists, and the replacement of medical men who have died or have given up practice. The new regulations have certain advantages over the old ones, for the number of medical men admitted to club-practice (which has hitherto been one for every 800 members) has been increased and the time for admission after qualification has been shortened so that several hundred more young practitioners may be admitted.

MEDICAL ASPECTS OF LONG CYCLING RACES.

Dr. Conrad, writing in the *Deutsche Medizinische Wochenschrift*, has described his experiences of the six days' cycling races, at which he has acted for many years as medical adviser. He points out that the professional six days' cyclist must be attended on different lines from the ordinary patient. Treatment of causes is of course impossible, quick help being wanted to enable the cyclist to continue the race. One of the most common ailments is laryngitis, due to the dust produced by the cyclists, the tobacco-smoke arising from onlookers, bad air, and irregular ventilation. As a quick-acting remedy he recommends a compound of tinctura aconiti, menthol, bromoform, and codeine. The pressure of the saddle sometimes produces maceration of the skin of the buttocks which by the action of sweat may lead to necrosis or to severe folliculitis. He has found brushing the skin with salicylic spirit useful as a prophylactic measure. A dislocation of the shoulder, if properly reduced, need not prevent the competitor from continuing his race, though this is against the general rules of surgery. The reduction must be performed under brief narcosis, the shock always connected with accidents not allowing deep anæsthesia, while postponement of the reduction until shock has disappeared is impossible. To strengthen the heart, strained by the exertion of the race, injection of cardiazol is advisable before the reduction. Gastric and intestinal troubles are common in professional cyclists, but they are very sensible about their food. Formerly they even brought their own cook with them, but now a German cook prepares the meals according to their accustomed diet. Owing to the sensitiveness of their intestines stimulating preparations must be administered as little as possible by mouth and preferably only by inhalation or injection.

REPRODUCTION OF CARDIAC SOUNDS.

At a recent meeting of the Berlin Medical Society Dr. L. Jacobsohn showed a method of reproducing cardiac sounds and murmurs on the principle by which sound films are made. He has calculated the rate of vibration of these sounds and has thus been able to compose them as sound pictures. By checking the sound pictures classified in groups of vibrations the method has been developed to such an extent that in the loud speaker the difference between the natural and the artificial sounds is no longer distinguishable. The sounds were clearly audible when demonstrated to the society, and they aroused a lively interest among the audience. Prof. Goldscheider, the president, said that Dr. Jacobsohn's device would be of great use in medical training.

DIAPHRAGMATIC HERNIA.

Prof. Gustav von Bergmann, head of the Medical Clinic of Berlin University, in a paper on Hernia of the Œsophageal Hiatus in the Diaphragm, read before the Berlin Society for Internal Medicine, says that that condition is not so rare as is believed, for about 300 cases have been seen in his clinic in recent years. Radiography, by which the diagnosis is made, gives results only when the patient is in the Trendelenburg position. Though not a hernia from an anatomical point of view, since no hernial sac exists, the condition is not a physiological variation but is definitely pathological, nearly all the patients complaining of pain at the ensiform process and of a feeling of oppression. Gastritis and even severe gastric hæmorrhage may result from the disturbance of circulation caused by the compression of the protruded portion of the stomach. In radiograms shown before the society a part of the stomach was visible above the diaphragm. Treatment consists in reduction of the hernia by inflation of the stomach and by gymnastic exercises; riding has given good results.

CORRESPONDENCE

REFERRED PAIN IN VISCERAL DISEASE.

To the Editor of THE LANCET.

SIR,—Your annotation on Prof. D. W. Carmalt-Jones article on Tender Rib Cartilage as a sign of Cholecystitis in THE LANCET of March 19th again raises the question of the nervous mechanism of referred pain in visceral disease. I am inclined to believe that the explanation of the phenomenon described by Prof. Carmalt-Jones is that a hyperalgesic area of skin and subcutaneous tissue was pressed against the rib cartilage, not that the rib cartilage itself was tender; a point which might be settled by subcutaneous infiltration with novocain.

The major question, however, remains. Does a viscero-sensory reflex as described by Mackenzie exist? Or is Mr. Morley's later theory to hold the field? I have just read Mr. Morley's recently published interesting monograph on abdominal pain, in which he postulates a peritoneo-cutaneous radiation theory as an explanation of certain clinical phenomena. He asserts that a viscero-sensory reflex does not exist, and seeks to explain the occurrence of hyperalgesia, superficial and deep tenderness as being phenomena referred from the highly sensitive cerebrospinal nerves of the parietal peritoneum. Yet on page 151 Mr. Morley says:

> "When we explore an abdomen under a general anæsthetic such as ether, we find a complete absence of intestinal movement. The small intestine which we know from X-ray observations to be under normal conditions, in constant peristaltic movement, lies completely immobile in the opened abdomen. This immobility appears to be due to *a reflex effect from stimulation of the parietal peritoneum by our incision, giving rise to an efferent impulse down the splanchnic nerves and an inhibition of intestinal movement.*" (The italics are mine.)

Surely Mr. Morley here postulates a true viscero-sensory reflex?

Again, how often have we all picked up the skin and subcutaneous tissue of the abdominal wall and elicited visible peristalsis in cases of obstruction. How other can this phenomenon be explained than by the existence of a viscero-sensory reflex?

I am, Sir, yours faithfully,

St. Leonards-on-Sea, March 23rd, 1932. DAVID LIGAT.

THE DURATION OF THE RED LOCHIA.

To the Editor of THE LANCET.

SIR,—The interest of Mr. Chassar Moir's able article in THE LANCET of March 12th centres in the fact that a large number of women after confinement suffer from intermittent or persistent bleeding from the uterus for varying periods beyond the text-book standard. If these cases are not treated it is my belief that many of them will later find their way to the gynæcological wards to undergo curettage or even hysterectomy. In a lecture to the Blackburn Division of the British Medical Association in 1928 I quoted some statistics from welfare centres. One centre recorded that during the year 50 women who had been confined were found to be still bleeding for weeks or even for months afterwards, and 20 of these cases actually came from St. Mary Abbots Hospital. As a result of a long series of observations, I have no doubt in my own mind that the hæmorrhage was secondary to an inflammatory condition of the uterus.

Prof. Robert Donaldson has also informed me that 70 per cent. to 80 per cent. of curettings received from the gynæcological department were inflammatory in type and that probably in many cases the inflammation dated from a previous labour or abortion. I would modestly suggest that where there is a prolongation of the red lochia the hæmorrhage is secondary to an acute or chronic inflammatory condition of the tissues of the uterus. In the case of the last 910 deliveries at this hospital, the prolongation of the red lochia after the seventh or eighth day, occurring in 72 of these, has been regarded as a sign of morbidity. Evidence of antenatal sepsis, malposition or abnormal labour was found in 55 per cent. of these cases. The question therefore arises, Can these cases be controlled by treatment? The answer is Yes, by glycerin irrigation, which, by promoting free drainage, relieves the inflammation which is responsible for the hæmorrhage. Again, these women in whom the lochia are prolonged, provide about 50 per cent. of our cases of puerperal sepsis. As a result of a careful investigation of 340 consecutive deliveries I have found that 80 of them showed signs of sepsis, 40 of them having pyrexia and 40 having prolonged red lochia after the first week without pyrexia. It is illogical, in my opinion, in estimating the part played by sepsis, to select as instances of sepsis only those who showed a rise of temperature. We must realise that there are degrees of sepsis and of inflammation and this is a fact which is not sufficiently appreciated. In many cases of peritonitis in women following childbirth or miscarriage, it is difficult to trace the origin of the infection, but if careful inquiry is made into their history it will be found that these patients have had prolonged lochia for some weeks. This, to my mind, is an indication that the uterus was left in a condition of chronic inflammation. Finally, although it is difficult to draw a dividing line clinically between what is physiology and what is pathology after delivery or abortion, I would suggest that where the red lochia persist beyond the seventh or eighth day glycerin treatment is to be commenced; otherwise, the high rate of morbidity now existing will continue.

I am, Sir, yours faithfully,

A. REMINGTON HOBBS.

St. Mary Abbots Hospital, Kensington, W.,
March 22nd, 1932.

THE INSURANCE OF PEDESTRIANS.

To the Editor of THE LANCET.

SIR,—You are to be thanked by drivers and walkers alike for the temperate tone of the article in your issue of March 19th on the proposal that motorists shall be liable to pay damages whether or not a road accident was caused by the driver's negligence, and whether or not the walker contributed by his negligence. This well-meant but most undesirable proposal enshrines the walker's suicidal notion that he has rights but no duties on the carriage way. This notion is the indirect cause of countless mishaps. The French provision of a small fine of one franc (2½*d.*) for a jay-walker has the opposite psychological effect and saves life by inducing responsibility. No doubt the absence of any footway to long stretches of country roads in England is a reproach, but as the voting power of motorists is only about one-twentieth of that of walkers, the motorists are not chiefly to blame (especially as they pay £60,000,000 a year to the exchequer as motorists in addition to their contribution to the highway rates).

I am, Sir, yours faithfully,

MERVYN O'GORMAN.

Embankment-gardens, S.W., March 29th, 1932.

PROPHYLACTIC PLASMOQUINE ON A TEA ESTATE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Dec. 26th, 1931, there appeared a letter under this heading and with the signature of Sir Malcolm Watson, of the Ross Institute. I wish to reply to it as briefly as possible.

In 1925 I visited the Travancore Tea Companies' Estates and spent about four weeks investigating malarial conditions. In the malaria season of 1926 the company agreed to my being there for a period of six weeks to start up antilarval and other measures. In 1927 I spent four weeks on these estates helping with the work and supervising all arrangements, particularly the oiling, which was on the whole very well carried out. Dr. J. H. Moore was stationed in this area and gave valuable help, especially with the treatment. In 1927 I came to Ceylon and have not been able to visit the estates since.

In 1928 Sir Malcolm Watson paid a visit of five or six days only to the estates; leaving Travancore he came to Ceylon and was very reticent about any recommendations that he had made in Travancore, but remarked that on one or two estates he recommended extending the area to be oiled. On June 11th, 1929, I wrote and asked him would he kindly let me have a copy of any report that he might be writing on the Vandiperiyar estates, as I was interested in them; on August 2nd, 1929, he replied as follows:—

> *Some time ago I got a letter from you asking if I would send you a copy of any recommendations I made about Vandiperiyar. I have not made any written report about Vandiperiyar, but some time ago Mr. Sylvester, the manager, came to the Institute and discussed the estates with me.*
>
> *As you know Mr. and Mrs. Cantlay have done such good work that there was little to say on the subject. I think my only recommendations were that a definite area of a quarter of a mile, round the lines, should be selected and controlled on each estate, and on one of the estates, Tungamullay I think I suggested, that some land should be acquired from the Government in order to complete the control work.*
>
> *It was, I think, Tungamullay where a swamp immediately below the lines and one or two other breeding places had not been controlled, and to these places I attribute the last outbreak of malaria.*

From the above it is obvious that at the time Sir Malcolm Watson himself did not consider that the slight increase in the area oiled was of very great importance. He now claims that this increase in the area oiled was the cause of the rapid decline in the malaria figures of 1929. Admitting that the area oiled was increased slightly, as was desirable, does he maintain that this would have reduced the percentage of parasites in the autumn blood slides from 73 per cent. to 7 per cent. and the gametocyte rate from 34 per cent. to nil in a year? There is conclusive evidence that our anti-gametocyte campaign, making use of plasmoquine, produced a very drastic reduction in the number of gametocyte carriers in the labour forces of the estates; therefore to say that this was not the main cause of the reduction in the number of reinfections and to attribute it to a very doubtful reduction in the number of anopheles is simply to acknowledge one's ignorance of mathematics. The area oiled was only increased in two estates, yet all showed improvement in the health figures. Further, it is possible to omit the figures on the two estates mentioned without upsetting my conclusions. Both Mr. Cantlay and Mr. Sylvester have informed me that there was practically no alteration in my original programme. Anyhow all the evidence and figures were published in two articles in the *Indian Medical Gazette* of December, 1930, and November, 1931. The figures speak for themselves, and I can confidently leave the final judgment to the readers of THE LANCET.

Plasmoquine assists the malariologist in the following ways: (1) in minute doses given to the gametocyte carriers it prevents the infection of mosquitoes (Barber, Newman, and Komp); (2) in medium doses (0·06 of a gramme spread over a week) it removes gametocytes from the blood (Knowles and Das Gupta); (3) in somewhat larger doses which have not yet been accurately determined for orientals, it prevents the infection after injection of sporozoits (James); (4) in two treatments (0·06 of a gramme over a week) it prevents relapses, reduces the number of carriers in a force and so reduces the number of infections (doses may not be adequate for all countries) (Clemesha and Moore).

The drug which has this remarkable action was given with very great care in accordance with my orders on all these estates, commencing September, 1928, and yet it is claimed that a slight increase in the area oiled (at the very outside of 10 or 15 per cent. on two estates out of nine) was responsible for the reduction in the amount of sickness on these estates.

I shall shortly be publishing some interesting graphs of badly infected estates in Ceylon, which have been kept practically free from malaria for more than two years by anti-gametocyte dosing with plasmoquine alone, antilarval measures being impossible on these estates. I do not propose to say much concerning the area to be oiled. In flat countries very likely the arrangements propounded by Sir Malcolm Watson answer satisfactorily in most years, but in mountainous countries, such as the Vandiperiyar Valley, they are useless. Anybody with an elementary knowledge of the habits of anopheles in hilly countries is well aware that these mosquitoes keep to the bottom of the valley and are also capable of travelling very long distances up and down ravines. Neither 20 nor 40 or much the larger number of chains are adequate to prevent invasion from outside in this type of country.

I do not propose to discuss the last two paragraphs of Sir Malcolm Watson's letter. One may search the book "Prevention of Malaria in the Federated Malay States" from cover to cover and not find the term "anti-gametocyte campaign" or very little that is in any way synonymous with it. Five years hence, when we know a little more about the uses and possibilities of plasmoquine, I think Sir Malcolm Watson's letter will cause a smile, and will be looked upon by the scientific world in much the same spirit as his pronouncement on plasmoquine at the meeting of the Industrial Anti-Malarial Advisory Committee of the Ross Institute, 1930, which the Editor of the *Indian Medical Gazette* discussed in his leading article of November, 1931.

There is one question which I would like to ask Sir Malcolm—namely, what was the cause of the complete breakdown of his oiling measures on the estates in the Federated Malay States in 1926. I have before me three reports of medical officers in that country; they all agree as to the facts—namely, that in spite of the most careful oiling, practically the whole of the labour force of estates was seriously infected throughout the whole Peninsula. I think I known the correct answer to this question, but I should like to know what so eminent an authority, as the writer of the above letter, thinks on the same subject.

I am, Sir, yours faithfully,

W. W. CLEMESHA,
Lt.-Col., I.M.S. (ret.), Malariologist to Control Scheme, Ceylon.

ÆTIOLOGY OF DISSEMINATED SCLEROSIS.

To the Editor of THE LANCET.

SIR,—Sir J. Purves-Stewart's and Dr. Hocking's communication in your issue of March 19th and your comments thereon justify other workers in giving their experience of vaccine therapy carried out on the lines originally instituted by Chevassut and Purves-Stewart. Since our first communiqué (THE LANCET, 1930, ii., 901) we have continued our treatment with an autogenous intravenous vaccine of 28 cases and re-examined the cerebro-spinal fluid after the course of injections. Although last year you informed us that, owing to the controversy as to the specificity of the so-called spherula insularis, you thought it wiser to abstain from publication of results until a larger volume of experience had been collected, we think it right that certain considerations should be laid before your readers so that they may draw their own inferences and conclusions, without bias.

From 1921–1929 disseminated sclerosis has been treated at Manor Hill Red Cross Hospital on the same lines as in other institutions—i.e., by intravenous arsenical injections. The rationale of this treatment was based on the alleged discovery by various observers of a spirochæte resembling but not identical with the *Spirochæta pallida* of syphilis. The spirochætal theory of causation having been discredited, the specific value of arsenic, such as neo-kharsivan, and silver salvarsan, would appear to vanish leaving only the tonic effect of arsenic and the empirical use of arsenic in any nerve disease to justify the continued use of arsenical treatment. In other words it is a case of "faute de mieux." So every doctor in charge of cases of disseminated sclerosis must have been hoping that a more specific treatment would be found. Chevassut's and Purves-Stewart's work appeared to hold out this hope, and it is certain that many like ourselves have been trying it out.

Unless results are published workers cannot compare notes and arrive at a conclusion. All we can do is to give honest impressions as to the value of treatment —i.e., from clinical and laboratory points of view. Pathologically the findings of cerebro-spinal fluid examination show definite changes after treatment. Clinically our experience has been that with a small range of doses—5,000,000 to 200,000,000—definite improvement has been shown. Second and third courses ranging from 20 to 600, and 50 to 1000 strength have had a uniformly bad effect. In this respect we regard one observation as being of definite value. During a second course two early cases received a dose of double the increase previously fixed on. Both had violent reactions—one was in bed for five days with weakness and increased spasm, the other with seriously impaired vision for three days. We have decided that for the present our dosage shall not be increased beyond 400,000,000. We think that it is a pity that Purves-Stewart and Hocking have not given their views on dosage. The only reference in the latest communication is to a course of 1–200,000,000. In the first communication, doses of over 1,000,000,000 were reported.

As regards the undecided question as to whether Chevassut's spherula is or is not the specific virus, we have an open mind. Different observers have differing opinions. We hold the view that, though it requires much practice to make the distinction, there are certain spherical bodies, distinguishable from commonly observed ones, which are almost always to be found in cases of disseminated sclerosis. We may add that we have never seen any filaments arising from the spherulæ. Whether these spheres constitute the actual virus or are merely an accompaniment of an unidentified virus, they at least afford a useful method of standardising the dosage of vaccine. In other words, we hold that the cerebro-spinal fluid of disseminated sclerosis contains a virus, vaccines from which have a definite effect clinically and pathologically on cases of disseminated sclerosis.

With regard to the empirical use of liver or massive doses of iron, it is probable that many are using one or other of these remedies in preference to vaccine—partly because they are equally experimental, and partly because of their easy administration—ignoring the fact that liver and iron treatment is based on the slender analogy of the subacute combined sclerosis complication of pernicious anæmia.

We are, Sir, yours faithfully,

A. C. RANSOME,
Medical Superintendent, Manor Hill Hospital, Birkenhead.

HUGH SMITH,
Hon. Pathologist to the Hospital.

March 28th, 1932.

To the Editor of THE LANCET.

SIR,—A letter from me in defence of Miss Chevassut was published in the issue of the *British Medical Journal* of March 14th, 1931, which was in answer to a criticism that appeared in the previous number. During the nine months which followed the publication of my letter I was in close touch with Miss Chevassut's work and methods. In the interests of the medical profession and sufferers from disseminated sclerosis I ask you to insert in your valuable journal this compressed account of the results of her work.

Early in 1931 the Halley Stewart Trust decided to provide a further opportunity for the trial of the method of treating disseminated sclerosis, based on the use of a vaccine prepared from cultures of a virus or organism, which Miss K. Chevassut claimed to have cultivated from the cerebro-spinal fluid of such cases, and described in an article in THE LANCET of March 15th, 1930. Premises were taken at 30, Chesterford-gardens, Hampstead, and equipped as a nursing home, with laboratories containing all the apparatus required by Miss Chevassut, to enable her to prepare the vaccine for the clinical trials, and to continue her investigations on the organism which she had described. Miss Chevassut, who was a grantee of the trust, was given the services of Mr. Lavington, who had acted as her laboratory assistant during her investigations at the Westminster Hospital. The institute provided a nursing staff and accommodation for 12 patients. I was appointed medical superintendent.

The institute was opened on March 29th, 1931, and by the end of the year 116 cases had been treated. Of this number 69 were readmitted on one or more occasions, thus providing opportunities for testing the results of the treatment. An analysis, drawn up by the medical assistant at the institute, of the results of these 69 cases is as follows :—

1. Cases showing considerable improvement ..	4 (5·80 %)
2. „ „ slight improvement	13 (18·85 %
3. „ „ no change of condition ..	25 (36·23 %)
4. „ definitely worse	27 (39·13 %
Total	69

These figures were submitted to Dr. F. M. R. Walshe, who has kindly given the trustees his views concerning them.

Dr. Walshe says, inter alia:

> "Your results amount roughly to this, that 25 per cent. of cases showed some measure of improvement (trivial in 20 per cent.) and 75 per cent. showed no improvement or definitely retrogressed. I may say with confidence these results are markedly worse than hospital records would show for the treatment on other lines of disseminated sclerosis, and also are not so good as a similar number of wholly untreated cases would probably show. I can only conclude from your figures that the treatment you have been investigating must aggravate the malady, and that the patients so treated are worse off than if they had been left alone."

Miss Chevassut made her first report to the trustees on her work in September, 1931. It was of a highly technical nature, and dealt with investigations in a number of different directions. It was submitted by the trustees to a committee of three eminent experts on pathology, and particularly on bacteria and viruses, who kindly examined the report and gave the trustees the benefit of their opinion. This opinion was entirely unfavourable, the committee expressing the view that the report had no scientific value. It described a successful cultivation of the specific organism, which she claimed could now be readily and regularly maintained in subcultures on solid media, and her records state that the organism was present in a very high proportion of the cases admitted to the institute during the six months from April to September, 1931. The committee therefore naturally desired to have the opportunity of examining the organism, and of verifying Miss Chevassut's detailed description of its microscopic and cultural characters. Miss Chevassut, however, was unable to furnish, for examination by the committee, a culture which she was willing to identify as that of the specific organism, but she readily promised to secure such a culture at the first opportunity. The trustees therefore, at a special meeting on Dec. 14th, decided to afford her a final chance of establishing her claim, and gave her the sole control of the laboratory, and the right to admit at least 12 cases for the period of a full month in which to provide positive cultures for verification by eminent scientists. She accepted these conditions but only admitted six patients, and having failed to produce from them a solitary culture she withdrew from the institute on Jan. 7th, a week before the expiration of the allotted month, and indicated her intention not to return. In view of the committee's adverse report, and her failure to produce a culture with the properties and appearances described in her report as characteristic of her disseminated sclerosis organism, which could be verified by independent investigators, the trustees had no alternative but to close the institute to her and abandon the trial of her method.

I am, Sir, yours faithfully,

B. H. STEWART, M.D.
(Trustee, Halley Stewart Trust.)

PS.—The above letter was drafted some weeks ago. The delay in submitting it for publication arose from a desire to have it approved by all concerned. Being written before your issue of March 19th it is in no sense a rejoinder to the article by Sir James Purves-Stewart and Dr. Hocking.

PERI-ARTICULAR ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—I should like to confirm the comments of your Paris correspondent on Dr. Leriche's method of peri-articular anæsthesia. Since reading the article in the *Presse Médicale,* I have applied the method to several cases of osteo-arthritis with considerable success.

The first patient was an old lady of 70 with osteo-arthritis of the right knee. Painful night starts were a trying feature. I found on examination that at two small spots near the internal lateral ligament it was possible by firm pressure to reproduce the spasm producing the night start. I infiltrated these spots with 0·5 c.cm. of percaine, and since that time there has been no recurrence of the night starts. Moreover, by further infiltration of two more painful spots, one at the inner border of the patella, and the other over the external lateral ligament, she has been able completely to extend the knee, a feat which she has been unable to accomplish for more than six months.

I have had similar success with other cases of osteo-arthritis and climacteric arthritis. There are generally to be found a series of painful spots about the internal lateral ligament and around the patella. Pressure on such a spot not only causes pain, but often a twitch can be seen to occur in one of the muscles moving the knee-joint. As your correspondent points out, it may be necessary to repeat the injections, but my experience has been that the increased range of movement permitted by this anæsthesia improves the blood-supply to the peri-articular structures and automatically massages the affected area.—I am, Sir, yours faithfully,

Bristol, March 29th, 1932. FRANK BODMAN.

ANÆMIA: A CORRECTION.

To the Editor of THE LANCET.

SIR,—I trust you will allow me to make an important correction to your leading article on anæmia, in which you refer so kindly to my Goulstonian lectures. The discovery that the gastric juice in simple achlorhydric anæmia contains the ferment which will generate from beef the substance which is missing in pernicious anæmia was made by Castle and co-workers (*Amer. Jour. Med. Sci.*, 1930, clxxx., 305, and 1931, clxxxii., 741). Dr. S. J. Hartfall and I have merely confirmed Castle's pioneer observations.

I am, Sir, yours faithfully,

Wimpole-street, W., March 26th, 1932. L. J. WITTS.

PRINCESS BEATRICE HOSPITAL.—The annual meeting of this hospital was held recently in the new building in Richmond-road, Earl's-court, which has been erected on the site of the old Kensington, Fulham, and Chelsea General Hospital. The building, which has 78 beds and two theatres, is now ready for the reception of patients; it is heavily in debt. Last year out-patients' attendances exceeded 39,000, an increase of more than 3000.

WOLVERHAMPTON ROYAL HOSPITAL.—The annual report describes 1931 as "the most difficult in the history" of this hospital. The daily average of occupied beds increased from 164 to 180; there were 5762 in-patients, 45,505 out-patients, and 7622 operations. The average stay at the General Hospital was 15·46 days, an increase on the last two years. The cost per head was £6 13*s.* 7½*d.*, also a slight increase; the cost per bed occupied was £157 14*s.* 4½*d.*, compared with £175 10*s.* 9*d.* the previous year, and £163 15*s.* 11*d.* in 1929. At the Women's Hospital the average stay was 14·2 days, a decrease on the previous year; the cost per head was £8 2*s.* 5*d.*, also a decrease; and the cost per bed occupied was £208 13*s.* 8½*d.*, compared with £209 2*s.* 11*d.* the previous year, and £225 4*s.* 5½*d.* in 1929. The accounts of the General Hospital show a deficit of £9807 and of the Women's Hospital of £6860. Legacies, however, amounted to more than £30,000, and great hopes are based upon the contributory fund started six months ago. With the exception of poor persons, all non-members of the contributory association will be called upon to pay a maintenance charge.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

EASTER ADJOURNMENT.

THE House of Lords and the House of Commons both adjourned for the Easter recess on Thursday, March 24th. Among the measures to which the Royal Assent was given by Royal Commission was the Dangerous Drugs Act. The House of Lords will reassemble on April 12th and the House of Commons on April 5th.

DANGEROUS DRUGS BILL.

In the House of Commons on Monday, March 21st, the Dangerous Drugs Bill passed through Committee and was read the third time without amendment.

PUBLIC HEALTH (CLEANSING OF SHELL-FISH) BILL.

On the motion for the second reading of the Public Health (Cleansing of Shell-fish) Bill,

Mr. ROSBOTHAM said that this was a Bill to give local authorities power to lend money for the erection of tanks for the cleansing of shell-fish. Very valuable beds of mussels existed on the banks of several of our rivers, in particular the River Ribble. They were worth several thousands of pounds but were being closed, owing to Public Health Orders, so far as human consumption was concerned. The tanks would provide a very simple method of cleansing the fish. The Ministry of Health had conducted experiments over a series of years and those experiments had been very successful. Now that there was a 10 per cent. duty on foreign mussels it was all the more important that this Bill should be passed.

The Bill was read a second time.

LOTTERIES FOR CHARITIES.

In the House of Commons on March 22nd, Sir W. DAVISON asked leave to introduce a Bill to authorise the raising of money by means of lotteries for charitable, scientific, and artistic purposes, or for any public improvement or other public object, under conditions approved by the Home Secretary. He said that when he introduced a Bill last year he confined its scope to the provision of funds for hospitals on the same lines as the sweepstakes in the Irish Free State. In view of representations made to him he had drawn the present Bill on somewhat wider and simpler lines, although British hospitals would still be within its scope and could take advantage of it should they so desire. It was interesting to note that of the 180 members of the House who voted against the Bill which he introduced last year some 130 had since lost their seats. He did not say that they had lost their seats solely because they voted against his Bill, but that they represented a type of mind not acceptable to the majority of their fellow citizens. Clause 1 of the Bill provided that notwithstanding anything to the contrary in any Act of Parliament or rule of law, it should be lawful for the governing body or trustees of any charity, and any trustees or body of persons appointed solely and mainly for the purpose of raising money for any scientific or artistic purposes, or for carrying out public improvements, to hold, with the approval of the Secretary of State, a lottery to raise money for such charity, purposes, or object. Clause 2 provided that no lottery should be held except in pursuance of a scheme sanctioned by the Secretary of State and for the charity or object named in the scheme. Clause 3 set out certain conditions and regulations, but did not preclude the Secretary of State from making others if he thought fit. The Bill would not apply to Northern Ireland. If it was thought that the scheme of the Bill was too wide, or that it should be confined to hospitals, as his last Bill was, or that the number of lotteries in any one year should be fixed, that could be easily done in committee. There was nothing inherently vicious or demoralising in holding a lottery. State lotteries were held in this country for many years. Queen Elizabeth was the first patron of a State lottery, which was held in this country for the repair of the havens of the realm and for public works. The penal legislation under which the Home Office now acted was passed in 1834, nearly 100 years ago. Under that, the Home Office searched travellers arriving at Holyhead, they opened private letters and even letters from solicitors to their clients. This legislation was not passed with any idea of stopping a vicious or immoral practice but to protect the State lotteries from unfair competition by private lotteries and lotteries organised abroad. From the Irish sweepstakes just concluded the hospitals received £841,000. Previously they had received over £2,000,000, and in all they had now had practically £3,000,000. How much sickness and suffering in this country might have been saved if this money had been kept here! A recent visitor to Dublin, who saw the hospital drum there, stated that when he arrived at Euston on his return he saw in the street a medical student beating a drum with a procession behind him, asking for alms for a London hospital. Which of the two methods was the most dignified? Another hospital appeal issued recently said that 1000 patients were waiting for beds owing to lack of funds. Those funds could be provided by a lottery. Of the £3,000,000 received in Ireland, over £2,000,000 came from this country. No one imagined that if lotteries for hospitals were established in this country they would maintain the hospitals; the hospitals wanted millions a year. They would, however, provide funds for urgently needed equipment and those beds which were urgently needed at the present moment.

Mr. HOPKIN MORRIS asked the House to reject the motion for the introduction of the Bill. He said he agreed that the betting law was in an anomalous position, and said that a far-reaching inquiry into the whole question was required. He agreed that hospitals were worthy objects, but were hon. Members going to support them by questionable means? The amount raised by bequests, subscriptions, savings associations, and paying patients for the voluntary hospitals in this country last year was between £13,000,000 and £14,000,000. That was in a year of acute depression. Of that sum some 50 or 60 per cent. came from voluntary contributions. What amount of sweepstakes would be required to assure an income equivalent to that amount? He was taking the figures of a very competent hospital accountant who said that it would require three sweepstakes a year each yielding £10,000,000; a total of £30,000,000 a year. If they took the figures of the Irish sweepstakes and assumed—and it was a big assumption—that there would be treble the number of subscribers in this country that would yield approximately £15,000,000, leaving a deficiency of £15,000,000. The testimony of the chairman of the Royal City of Dublin Hospital was to the effect that the annual subscribers were withdrawing their funds on the ground that they were no longer needed, that paying patients, generally working-class men and women, were objecting to pay anything for treatment, that business firms were refusing to pay anything, and that people were not now leaving bequests for hospitals. The Governor of the Charing Cross Hospital stated last year: "Speaking for myself and this hospital we will have neither part nor lot in any such scheme, and our reasons are not simply moral ones, though they weigh very considerably. Looking at it from a business standpoint we believe the gain would be outweighed by the loss." This was clearly a case where there should be an inquiry first. They could not put these charitable institutions, depending as they did on the moral goodwill of men and women, on the basis of chance. (Cheers.)

Leave was given to introduce the Bill by 176 votes to 123—majority 53. Sir W. Davison then brought in the Bill amid cheers and it was read a first time.

HOUSE OF COMMONS.

TUESDAY, MARCH 22ND.

Small-pox Statistics.

Mr. GROVES asked the Minister of Health whether the statistics of small-pox cases published in the epidemiological report of the health organisation of the League of Nations were supplied by his department; and whether the statistics of small-pox deaths were also supplied.—Sir E. HILTON YOUNG replied: The official returns of the Registrar-General and other official documents relating to small-pox cases and small-pox deaths in England and Wales are regularly supplied by my department to the Health Organisation of the League of Nations and are available to that organisation in the preparation of its epidemiological reports.

Miners' Nystagmus.

Mr. PARKINSON asked the Secretary for Mines the number of cases of miners' nystagmus which had occurred in the Lancashire coalfields for 1927, 1928, 1929, 1930, and 1931, respectively.—Mr. ISAAC FOOT replied: The number of cases of nystagmus in Lancashire and Cheshire certified under the Workmen's Compensation Act during the years in question was in 1928, 319; in 1929, 302; and in 1930, 306. This information is not available for 1927 and the returns for 1931 are not yet completed.

Duties on Imported Milk.

Sir CHARLES CAYZER asked the Secretary to the Treasury what proportion of the milk imports into this country were subject to the new duties imposed under the Import Duties Act on the basis of the trade figures for 1931.—Major ELLIOT (the Financial Secretary to the Treasury) replied: It is estimated on the basis of the Trade Accounts for 1931 that the general ad-valorem duty will be paid on approximately 22 per cent. of the milk imports.

Sir CHARLES CAYZER asked the Secretary to the Treasury whether his attention had been called to the fact that duty was not being charged under the Import Duties Act on imported sweetened condensed milk because such milk was already taxed on its sugar content; and for what reason this decision was reached, in view of the fact that double duties in respect of the Abnormal Importations (Customs Duties) Act and under legislation previous thereto were being charged on a number of other imported manufactured articles.—Major ELLIOT replied: There is no analogy between the Abnormal Importations Act and the Import Duties Act, since the object of the former was expressly to prevent the influx of certain goods into this country. I may point out that it is open to the Advisory Committee to consider the case of any composite goods and to recommend additional duties in respect of them.

Abortion.

Lieut.-Colonel MOORE-BRABAZON asked the Minister of Health whether he would consider the present state of the law with regard to the practice of abortion under the Act of 1861 with a view to amending that Act.—Sir T. INSKIP (Attorney-General) replied: I am at all times happy to consider the state of the law with regard to any subject, but I am not at present satisfied that the law concerning this matter requires amendment.

WEDNESDAY, MARCH 23RD.

Purity of Milk Supplied to the House.

Mr. GLOSSOP asked the Chairman of the Kitchen Committee whether he was aware that milk supplied in the members' tea room on Wednesday, 16th instant, was found on analysis to contain 2,000,000 bacteria per c.cm. and bacillus coli present in 1/1000 c.cm.; that the lowest standard graded milk was not allowed to contain more than 200,000 bacteria per c.cm. and no bacillus coli whatsoever; and what steps he proposed to take in order to safeguard the health of members who consumed milk with their tea.—Sir J. GANZONI (for the Chairman of the Kitchen Committee) replied: All milk provided by the Kitchen Committee is pure full cream, pasteurised milk, of the first quality. It is delivered in the original ten-gallon cans, sealed and fastened, from the same dairyman who has supplied us for over 20 years. As the Committee had no notice from the hon. Member that a sample was being taken on Wednesday, March 16th, until the question appeared on the Order Paper on Tuesday, March 22nd, they can have no knowledge as to whether it was properly taken, if in a perfectly sterile vessel, kept at a suitable temperature, and analysed immediately afterwards. The Committee take every precaution to secure the purity of the supply.

Mr. GLOSSOP: Is the hon. Member aware of the very unsatisfactory results of the test which has been carried out on rats after feeding them with pasteurised milk, and in view of the fact that this House contains so many young members for whom milk should still form an essential part of the diet. (Laughter.)

The SPEAKER: The hon. Member must concentrate his question in shorter form.

Fatal Aircraft Accidents.

Mr. SIMMONDS asked the Under-Secretary of State for Air the number of persons killed in this country during the last three years whilst flying in aircraft bearing a British-validated foreign certificate of air worthiness; and what proportion of these deaths was due to mechanical or structural failure.—Sir P. SASSOON (Under-Secretary of State for Air) replied: During the last three years there has been one fatal accident in this country to an aircraft with a British-validated foreign certificate of air worthiness; this accident involved six deaths and was due to structural failure.

Mr. SIMMONDS: Does not the Under-Secretary think that this matter should be investigated, because these validated certificates tend to bring our own certificates into disrepute?

Sir P. SASSOON: There has only been one accident in three years, and the whole report upon it has been published.

THURSDAY, MARCH 24TH.

Health and Pensions Insurance.

Sir R. ASKE asked the Minister of Health whether he was aware that, owing to the unemployment that had existed for years in shipbuilding and other industrial areas, numbers of men were being disqualified for sick benefits and contributory pensions; and whether he would consider the desirability of introducing legislation to reduce the number of qualifying contributions in such cases until more work is available. —Sir E. HILTON YOUNG replied: It would appear that my hon. friend has been misinformed, inasmuch as under the existing law the health and pensions insurance of persons who are unable to secure work is maintained so long as they can prove that they are genuinely unemployed, and provision is also made to secure that an insured person shall not suffer loss or reduction of benefits as a result of arrears due to unemployment. In these circumstances I cannot see any necessity for amending legislation on the lines suggested.

Police Witnesses and Accident Cases.

Captain MOSS asked the Home Secretary if he would reconsider the decision communicated to chief constables on May 27th, 1929, whereby chief constables were authorised to demand a payment as a condition of permitting a police constable, who had witnessed an accident, to be interviewed and a note, proof, or precognition of his evidence to be taken with a view to tendering him as a witness in a civil claim for damages.—Sir H. SAMUEL: No, Sir; the amount of police time occupied by interviews of this nature fully justifies the making of a charge.

Mr. MACQUISTEN: Does the right. hon. gentleman not see how that would injure the course of justice if a private citizen were not to do his duty unless paid in advance. Why should a policeman not do the duty of an ordinary citizen without being paid for it?

Sir H. SAMUEL: The police are not primarily concerned with civil litigation, and if the private parties to civil proceedings require police evidence and take up the time of the police it is right in the public interest that a fee should be paid. If in any particular case hardship is involved on account of poverty the fee is waived. If a policeman is summoned as a witness he has to attend in the ordinary course, but for interviews beforehand with solicitors and so forth a public servant, such as a policeman, is entitled to have his services charged for in the interests of the public purse.

Medical Treatment of School-children.

Mr. GROVES asked the President of the Board of Education what provision was made by his Department to grant compensation to any school-child who met with permanent physical injury whilst attending for treatment under the instruction of the local education authority's school medical service.—Mr. HERWALD RAMSBOTHAM (Parliamentary Secretary to the Board of Education) replied: There have been very few cases indeed in which children have received permanent physical injury as a result of medical treatment received under arrangements made by local education authorities. There have been a few cases in which local authorities, while not admitting legal liability, have made payments as a result of complaints of this character, and the Board of Education have recognised their expenditure for the purposes of grant. The Board have no power themselves to grant compensation in such cases.

THE INTERNATIONAL CONGRESS OF SURGERY.

MADRID, MARCH 14TH–19TH.

(FROM A CORRESPONDENT.)

THE ninth Congress of the International Society of Surgery, held in Madrid, was in every way a notable success. The President of the Republic and several members of his government were made members of honour for the occasion, while the local arrangements were carried out by a committee presided over by the venerable Prof. Sebastián Recaséns, whose energy and driving force had obviously done much to make the congress possible. The occasion was attended by members from some 30 countries, including such far distant places as Finland, Poland, Japan, America, and New Zealand.

The British members were only five and of this small band Dr. Macdonald was a resident of Huelva in Spain. The United States of America sent three members (Drs. Elsberg and Lilienthal, of New York, and Mixter, of Boston). But the congress generally was thoroughly representative and was well patronised, about 300 members being present. The greater number came from Spain, but there were many from France and Italy, while for the first time since the war, Germany sent delegates, and the attendance of Prof. Sauerbruch, of Berlin, added much to the vitality of the meetings. The Government of the Republic and the municipality of Madrid did everything possible to make the congress a success and placed the Senate House at the disposal of the members, and here all the principal meetings were held.

Prof. F. de Quervain, of Berne, was the president of the congress, and he was ably supported by Prof. Verhoogen, of Brussels, president of the society. The vice-president, Prof. Recaséns (Madrid), the members of the international committee, and the energetic secretary of the society, Dr. L. Mayer (Brussels), all played a part in carrying through a wonderful programme. The Senate House was packed for the inaugural ceremony at 11 o'clock on Tuesday, March 15th, and the occasion was notable because of the attendance of the President of the Republic, His Excellency Alcalá Zamora, who opened the congress, and in welcoming the members to Spain took occasion slyly to refer to the bloodless operation which had recently been carried out in his country. The mayor of Madrid also spoke and gave a warm welcome on behalf of the city over which he presides. Dr. L. Mayer, the secretary-general, gave an admirable report of the work of the society, speaking first in Spanish and continuing in French, and Profs. Verhoogen and de Quervain also addressed the assembly.

SCIENTIFIC SESSIONS.

The scientific work of the congress began immediately afterwards. The first question was the Surgery of the Œsophagus and reports were presented by Gregoire (Paris), Zaaijer (Leiden), Lusena (Genoa), Cardenal (Madrid), and Grey Turner (Newcastle). No really new ground was broken; everyone was pessimistic about the treatment of carcinoma and this was emphasised by Sauerbruch who took part in the subsequent discussion. Nevertheless it was admitted by several of the speakers that the alternatives had been almost equally disappointing and that the methods of radical operation could not be entirely discarded in the hope that some practical and successful method might yet be evolved. Grey Turner spoke of the pull-through method and expressed the belief that at some future congress fresh hope would dawn on this dismal subject. Several speakers referred to the diminishing frequency of œsophageal conditions amenable to major surgery because of the earlier diagnosis and treatment of the causative lesions. Each day the scientific discussions were resumed in the afternoons at 3.30 and continued until 5.

The second question, discussed on Wednesday, was the Treatment of Non-Tuberculous Suppuration of the Lung. Among the reporters were Sauerbruch (Berlin), Lilienthal (New York), Baumgartner (Paris), Martin Lagos (Valencia), Ascoli (Rome), and others, and no less than 29 speakers had signified their intention of joining in the subsequent discussion. Fortunately, perhaps, many of these were not present or the discussion would have been endless. None the less it is disappointing to read distinguished or interesting names on the order of the day, only to find that they are not in attendance when called upon.

The third question was The Diagnosis and Surgical Treatment of Tumours of the Spinal Cord. Notable communications were made by Prof. Beriel, of Lyons, who came by invitation to address the congress on the question of diagnosis, by Elsberg, of New York, who spoke from his very large experience of over 200 cases, by de Martel, of Paris, and Jurasz, of Posen. In the subsequent discussion, Prof. A. Young (Glasgow), Mixter (Boston), and Lambert Rogers (Cardiff), among others, spoke. The caution urged in the use of lipiodol was notable, and Elsberg said that in a long series of cases it had only been used in 5 per cent. Prof. Young drew attention to the difficulties associated with multiple and with metastatic tumours. Leriche urged the claims of osteoplastic laminectomy, especially in the cervical region, and Lambert Rogers, in a lucid communication, endeavoured to enumerate the factors which had a bearing on the question of prognosis after operation. The last question, discussed on Friday, was Recent Progress in Anæsthesia. In this a careful paper was presented by Ishikawa (Japan) whose investigations on local anæsthesia in animals largely proved the well-known conclusions reached by Lennander, of Upsala, years ago. The report by Jurasz (Posen) was careful and complete, while that by Anschütz (Kiel) on Avertin was moderate in tone and helpful.

The scientific sessions were very well attended, and it was remarkable how interest was sustained throughout despite the polyglot assembly. Of course there was the usual difficulty of restraining ardent speakers to something like a reasonable time limit, and this reached a climax when one member, who was allotted 5 minutes, continued for 25! Copies of many of the papers were distributed at the congress, each with a short summary in each of the six official languages. Eventually, these, with others, will be issued in a volume or volumes of 2000 pages which will be distributed gratis to each member.

OTHER ACTIVITIES.

In the anterooms of the Senate House there was an exhibition of surgical instruments, books, &c. Among these was a notable exhibit from the National Surgical Instrument Factory which has been established at Toledo, truly an example of the conversion of bayonets into ploughshares. On Thursday and Friday mornings at 9 o'clock operative sessions were arranged at the hospital clinic of the faculty of medicine, and it was an inspiration to see many of the surgeons whose names are bywords in Europe riveted on the work in hand, though probably this critical audience had an appreciable effect on the operators. In another hospital, Prof. Recaséns also conducted an operative session.

On Wednesday morning the members of the congress paid a visit to the University City which is being erected in the suburbs, and where in a large settlement accommodation of every kind is being provided for 2000 students of the medical faculty. This includes not only all the requisites for teaching, laboratories, &c., but residential quarters, and an enormous stadium. Social functions were innumerable and commenced with a reception, on the night of our arrival at Madrid, at 10.30, which for that city, is quite a reasonable hour. At this and all similar functions an ample midnight meal was provided, euphemistically called "lunch," which is a very popular word on the menus in the capital of Spain. This was invariably followed by dancing, which was carried on until 2 or 3 o'clock in the morning. Those of us who were expected to be present at some academic function on the following days, commencing not later than 9 o'clock, could well understand the sentiments of Sancho Panza when he declared "thrice blessed be the man who first invented sleep." Other social functions included a reception at the National Palace by the President of the Republic, a reception by the mayor at the town hall, and a gala performance at the theatre. An excellent entertainment and reception was provided by the president of the congress, de Quervain, where we were introduced to a wonderful exhibition of Andalusian dancing and music. This and other entertainments innumerable were brought to an end with a final "Banquet of Closure" which was an enormous affair which everybody with their ladies attended. Here the speeches were limited, for the banquet itself did not commence until 10 o'clock, and if, as at other congresses, every delegate had been expected to reply for his country, then we must have gone on till the following day at breakfast time. But the occasion was not wasted by our hosts, for the Minister of Public Instruction and again the Mayor of Madrid, took the opportunity of doing a little propaganda on behalf of the new régime.

Perhaps the most pleasant part of all the congress was the informal meeting of friends, and, indeed, this sort of thing is probably the most useful function of any congress of the kind, for it is a great privilege to meet in the flesh men whose surgical names are known the world over, to renew friendships, and to make new ones. Nothing is more likely to promote international good feeling, for truly surgery knows no frontiers, and one soon learns that there are caballeros in every land. It is a great pleasure to pay a tribute to the cordiality with which the congress was treated on all hands, and those who took part must feel grateful to Prof. Recaséns, the president of the local committee, and to his collaborators, and to Prof. Lozano, of Saragossa, whose privilege it was to first issue the invitation for the congress to visit Spain.

The next meeting has been fixed to take place in Egypt in 1935. Prof. Anton von Eiselsberg, of Vienna, is president-elect, and the following are the subjects already selected for discussion: (1) The Surgery of the Parathyroids; (2) The Non-Malignant Diseases of the Colon; (3) The Lumbar Sympathetic. In addition there will be a fourth subject to be chosen by the executive, and this will probably deal with some aspect of tropical disease.

OBITUARY

ROBERT MATTHEW BRONTË, L.R.C.P., L.R.C.S.I., D.P.H.

Dr. Robert Matthew Brontë, whose death announced in our issue of last week, was a northe Irishman, born at Armagh and educated at t Royal School there. He commenced his profession career in the old-fashioned way as an apprentice a medical man in Inniskillen, and completed medical course in Dublin, qualifying with the doul diploma in 1907, while in the following year he obtain the D.P.H. of the Irish College of Surgeons. made no attempt to obtain any academic distinctio but immediately showed his practical interest subjects familiarity with which gave him afterwar his public position. He became a demonstrator the Royal College of Surgeons and held private classe which were very popular among students enteri for examinations. He lectured on public heal and familiarised himself with the analytical side the chemistry required, while he also assisted at o time the professor of chemistry in the College. Th led to his holding the appointment in Ireland Crown Analyst, a post which he held until he came England ten years ago and went to live in Harro He became here pathologist to the Harrow Hospit a post which he combined with that of pathologi to the Samaritan Free Hospital for Women. showed himself particularly interested in all questio of forensic medicine and this led to an increasi association with the coroner's court in the Weste District and elsewhere. He was frequently considerable help to coroners who, in Lond especially, find considerable difficulty in getti assistance in the performance of post morte Most of the pathological specialists in London ho full time appointments connected with the teachi schools or under the L.C.C. and are not availab to help coroners in this direction. Dr. Bron undoubtedly provided the London coroners wi expert assistance on many occasions, but he had official connexion whatever with the Home Offic and the description of him as the "Home Offi expert," frequently used in newspapers, placed hi occasionally in an unpleasant situation with t Government Department. He was never invited assist the Crown in medico-legal work except in cas where he had already performed the post-morte examination at the instance of the coroner, when, course, he gave his evidence as any other medic practitioner would have done. He was concerned many causes celèbres and proved himself a goo witness. In big criminal trials it is always importa that the defence should have expert legal advi and Dr. Brontë acted in this capacity on man occasions. Although in the two most sensational tria with which he was concerned he failed to shake t belief of the juries in the guilt of the accused, knowledge of pathology was considerable, and he w making good use of his experience when he died March 22nd, at the comparatively early age of 52.

THE LATE DR. G. B. HILLMAN.

THE following appreciative note upon Dr. G. Hillman, whose death was chronicled in THE LANCE last week, reaches us from Dr. Wardrop Griffith:

"By the death of Dr. G. B. Hillman a great loss h fallen upon the West Riding, for Wakefield has lo its Member of Parliament, a justice of the peace, an one of its former mayors; the Local Medical and Panel Committee is deprived of its greatly respected chairman; and a large circle of personal friends and patients will have to lament the passing of one in whom they had learned to place great trust and who stood very high in their affection. During his 30 years at Castleford he conducted a large general practice and he stood high, and most deservedly so, in the trust of his patients. In his public work he was most painstaking and conscientious, and everyone felt that when he expressed an opinion it was the result of careful thought. In no capacity did his work command the respect of his professional brethren in a greater degree than in his conduct in the chair of the Local Medical and Panel Committee of the West Riding of Yorkshire. Invariably courteous and patient, he encouraged the fullest expression of opinion on the part of all the members, but with tact he seemed to guide the meeting in the right direction and to secure a large measure of agreement in many a difficult and controversial matter."

A service was held at Holy Trinity Church, Wakefield, before the interment at Castleford, and this was largely attended by representatives of various public bodies and by a large number of medical men from the wide area of the West Riding.

MEDICAL NEWS

University of Leeds.

At recent examinations the following candidates were successful:—

M.D.

Mildred I. Ealing.

CH.M.

A. B. Pain.

FINAL EXAMINATION FOR M.B., CH.B.

Part I.: F. Badrock, G. W. Blomfield, Kathleen S. Bruce, F. L. Cane, Y. Carasik, C. D. Clark, O. E. Fisher, J. Gibson, L. Goldwater, S. I. Leshinsky, Vida L. Liddell, E. Lodge, K. O. Milner, J. T. Rhodes, R. T. Rushton, W. Sharp, D. Thackray, W. H. Tod, N. Wood, and W. Zemsky. *Part II.:* H. Agar, Doris B. Brown, E. Gledhill, Gwendolen Harrison, H. Hart, F. R. W. Hemsley, Ruth Hooton, A. G. James, E. A. James, F. C. Leach, I. Macpherson, J. Q. Mountain, I. Rosenberg, L. W. Russell, and M. Shankhla. *Part III.:* E. Gledhill (First Class Honours), Doris B. Brown (Second Class Honours), H. Agar, Gwendolen Harrison, H. Hart, Ruth Hooton, A. G. James, I. Macpherson, J. Q. Mountain, I. Rosenberg, L. W. Russell, C. K. Shain, and M. Shankhla.

FINAL EXAMINATION FOR L.D.S.

Muriel Barnby, G. L. B. Fillingham, and J. Jackson.

D.P.H.

J. F. Galpine.

D.P.M.

F. E. Kingston.

Royal College of Surgeons of Edinburgh.

The following candidates, having passed the requisite examinations, have been granted the diploma of L.D.S.:—

Maurice Goldfar, G. A. Rodger, R. C. Stanger, R. A. F. Murdoch, William Arbuckle, K. P. Whaley, and William Elgey.

Progress of Cremation.

Presiding at the annual meeting of the Cremation Society in London on March 16th, Mr. Murray Phelps said that when it was remembered that every year something like half a million bodies were buried in our midst, it was certainly remarkable that no legislative measure of reform had been attempted since the Burial Act of 1885. One cemetery in the heart of London, which was opened in 1810, and in which over 155,000 burials had taken place in the following half century, was still being used for interments. Public money which could be more usefully employed was being spent in the wasteful acquisition of large areas of valuable land for purposes of burial in and around large centres of population. With a view to bringing cremation within the reach of wider sections of the population, nearly every cremation authority had adopted a reduced scale of charges for persons insured under the National Health Insurance scheme and their dependants. The annual report showed that there were now 22 British crematoria, and that the number of cremations had increased from 4533 to 5195 during the year. This figure, however, represented only 1 per cent. of deaths, which showed how little progress cremation had yet made here as compared with Central Europe and Scandinavian countries.

University of Liverpool.

Dr. Herbert Roaf, professor of physiology in the London Hospital Medical College, has been invited to accept appointment to the George Holt chair of physiology in the University, in succession to Prof. J. S. Macdonald, who will retire at the end of the present session.

Osler Club.

At a meeting of this club on March 24th, Sir Robert Philip gave an address entitled *Robert Koch's Discovery of the Tubercle Bacillus: Some of its Implications and Results.* A vote of thanks was proposed by Dr. W. G. Willoughby, president of the British Medical Association, and seconded by Dr. William Stobie, mayor of Oxford.

Royal Society of Arts.

Prof. J. C. Drummond will give three Cantor lectures before this society (John-street, Adelphi, London, W.C.) at 8 P.M. on Mondays, April 18th and 25th, and May 2nd. His subject will be Recent Researches on the Nature and Functions of Vitamins.

Paddington Medical Society.

At a meeting of this society on April 12th a debate on a State Medical Service will be opened by Mr. Somerville Hastings and Sir Ernest Graham-Little. Dr. G. C. Anderson (deputy medical secretary, British Medical Association), Dr. A. Welply (secretary, Medical Practitioners' Union), and Dr. C. L. Batteson (secretary, London Panel Committee) have promised to speak. The hon. secretary's address is 23, Westbourne Park-road, London, W. 2.

Hospital Libraries.

Dr. Barrie Lambert, chairman of the central public health committee of the L.C.C., will take the chair at a meeting to be held at the County Hall, Westminster Bridge, S.E., at 5.30 P.M. on Friday, April 29th, to discuss Hospital Libraries and Librarianship. The speakers will include Lord Gorell, Dr. H. A. Powell, Dr. W. J. T. Kimber, and Mr. C. Hagberg Wright, LL.D. Further information may be had from the organising secretary, British Red Cross and Order of St. John Hospital Library, 48, Queen's-gardens, W.2.

Medical Advisory Board for Blind Masseurs.

The Association of Certificated Blind Masseurs has formed a medical board to advise on the extension of training of blind masseurs and masseuses. It will consist of Dr. L. Danyers Bailey, Dr. C. C. Worster-Drought, Dr. F. D. Howitt, Dr. W. Kerr Russell, Mr. P. Jenner Verrall, Mr. A. Mace (representing St. Dunstan's), and Mr. P. L. Way (representing the council of the Association and the Massage School of the National Institute for the Blind). The secretary is Mrs. F. Chaplin Hall.

Demonstrations of Contraceptive Technique.

The Society for Constructive Birth Control and Racial Progress inform us that at 2.30 P.M. on Wednesday, April 6th, demonstrations of contraceptive technique will be given at their clinic to medical practitioners and senior medical students who will be given an opportunity of practising under tuition a variety of methods. Application should be made to the hon. secretary of the society at 108, Whitfield-street, London, W.1.

Dr. Alfred Cox Testimonial.

At the invitation of Sir Arthur Cope, a few members of the executive committee of the Fund attended at his house to see the portrait painted of Dr. Alfred Cox before its transfer to the Royal Academy on April 4th next. The opinion was unanimous that Sir Arthur Cope had caught, in a pleasing manner, the personality of Dr. Alfred Cox, and this was expressed to him on behalf of those present by Sir Ewen Maclean, chairman of the executive committee, and endorsed by others present.

Worthing Hospital.

The report of this institution, presented at the annual meeting on March 21st, showed an increase alike of in-patients and out-patients. Referring to the fact that more work is placed on the honorary medical staff, the governors said that "if only the public were more fully aware of the time and skill voluntarily given by the medical staff, we feel sure it would make a greater effort to supply the funds required to back it up." The report showed that it was for want of funds that only 67 of the 78 beds could be properly staffed and used; and it was considered that with a population of over 50,000 people, there should be more than 700 annual subscribers. Compared with deficits of £1688 and £1325 in 1929 and 1930 respectively, the year's working showed an adverse balance of only £65; this was due to various special efforts on behalf of the hospital and to the exercise of the strictest economy.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, April 5th.—5.30 P.M., Orthopædics. (Cases at 4.30 P.M.) Mr. W. H. Ogilvie: 1. Fracture of Cervical Spine. 2. Tuberculous Disease of Pubis. Mr. H.J. Seddon: 3. Successful Arthroplastics in Old Case of Still's Disease. Mr N St J Burton : 4. Pathological Specimen of ith. Mr. E. P. Brockma of Case Shown Previously. Dr. E. Henrietta Jebens: 6. Myeloma of Tendon Sheath. Mr. R. C. Elmslie: 7. Traumatic Dislocation of the Hip Followed by Coxa Plana. Other cases will be shown.

Wednesday.—5 P.M., History of Medicine. Dr. Ernest Jones: Medical, Theological, and Popular Views Concerning the Nightmare. A discussion will follow in which Dr. William Brown, Prof. C. G. Seligman, and others will take part. Dr. R. O. Moon (for Dr. B. Farrington): The Preface of Andreas Vesalius to the De Fabrica. 8.30 P.M., Surgery. Paper: Mr. R. E. Kelly: The Use of the Cinematograph in the Teaching of Surgery. Films will be shown by Mr. Kelly and Mr. W. H. Ogilvie.

Thursday.—8 P.M., Tropical Diseases and Parasitology: Medicine. Discussion: The Megalocytic Anæmias of Tropical and Non-tropical Countries. Openers: Dr. N. Hamilton Fairley, Dr. Lucy Wills, Dr. G. W. Goodhart, and Dr. L. J. Witts. The discussion will be preceded by an Illustrative Demonstration by Dr. Hamilton Fairley. Members of the Sections of Obstetrics and Gynæcology and Pathology are specially invited to attend.

Friday.—5.30 P.M., Clinical. (Cases at 4.30 P.M.)

WEST KENT MEDICO-CHIRURGICAL SOCIETY, Miller General Hospital, Greenwich.

Friday, April 8th.—8.45 P.M., Mr. A. Walker: Danger Signals in Midwifery Practice.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street,

Friday, April 8th.—8.30 P. : Toxic Jaundice and Discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, W.6.

.—10 A.M. to 1 P.M., Gynæcological Wards, Genito-Urinary Operations, Skin Department. 2 to 4 P.M., Operations, Surgical Wards. Medical, Surgical, Gynæcological, and Eye Out-patients. 4.15 P.M. (Lecture) Sir Henry Simson: The Management of Pregnancy and Labour.

Tuesday.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Department. 2 P.M. to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Mr. Tyrrell Gray: Visceroptosis.

Wednesday.—10 A.M. to 1 P.M., Medical Wards, Children's Medical Out-patients, 2 P.M. to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

Thursday.—10 A.M. to 1 P.M., Neurological Out-patients, Fracture Demonstration. 2 P.M. to 4 P.M., Operations, Medical, Surgical, Genito-Urinary and Eye Out-patients. 4.15 P.M. (Lecture): Dr. Scott Pinchin: Diagnosis and Treatment of Pulmonary Tuberculosis.

Friday.—10 A.M. to 1 P.M., Medical Wards, Skin Out-Patients, Dental Department. 12 noon, Medical Lecture. 2 P.M. to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Dr. Redvers Ironside: Wasted Hands.

Saturday.—9 A.M. to 1 P.M., Throat Operations, Medical Wards, Surgical and Children's Medical Out-patients.

The lectures at 4.15 P.M., on Mondays, Tuesdays, Thursdays, and Fridays are open to all medical practitioners without fee.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.

Wednesday, April 6th.—3 P.M., Mr. C. Morson: Calculous Disease of the Urinary Tract.

ST. MARK'S HOSPITAL, City-road, E.C.

Thursday, April 7th.—4.30 P.M., Dr. Cuthbert Dukes: Classification of Cancer of the Rectum.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, April 8th.—4 P.M., Mr. F. W. Watkyn-Thomas: Points in the Acute Mastoid Operation.

SALFORD ROYAL HOSPITAL.

Thursday, April 7th.—Dr. C. J. Langley: Demonstration of Cardiac Cases.

MANCHESTER ROYAL INFIRMARY.

Tuesday, April 5th.—4.15 P.M., Prof. S. L. Baker: Post-mortem Findings in Cases of Cardiac Failure.

Friday.—4.15 P.M., Mr. J. P. Buckley: Demonstration of Surgical Cases.

ANCOATS HOSPITAL, Manchester.

Thursday, April 7th.—4.15 P.M., Dr. E. W. Twining: Radiology of Brain Lesions with Special Reference to Tumour.

ROYAL MATERNITY AND WOMEN'S HOSPITAL, Glasgow.

Wednesday, April 6th.—4.15 P.M., Prof. James Hendry: Obstetrical Cases.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Jun. H.S. At rate of £120.

Aylesbury, Royal Buckinghamshire Hospital.—Res. M.O. At rate of £200.

Babies' Club, Chelsea.—Asst. M.O.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—Two H.P.'s and One H.S. Each at rate of £100.

Birmingham, Dudley-road Hospital.—Gynæcologist and Obstetrician. £750.

Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.

Blackburn Royal Infirmary.—Fourth H.S. £150.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bootle General Hospital, Derby-road, Bootle, near Liverpool.—Hon. Aurist.

nd Ear Hospital.—Jun. H.S. £150.

itution.—Asst. M.O. £250.

Bristol Eye Hospital.—Hon. Ophth. Surgeon.

Burton-on-Trent General Infirmary.—Jun. H.S. £150.

Cancer Hospital, —H.S. At rate of £100.

City of London of the Heart and Lungs, Victoria Par of £100.

Colchester, Essex County Hospital.—H.S. £175.

Connaught Hospital, Walthamstow, E.—Sen. Res. H.S. At rate of £150.

Derby, Derbyshire Hospital for Sick Children.—Res. H.S. At rate of £130.

Derb —H.S. for General Surgery. £150.

Dorc £650.

Exet –School Medical Inspector. £500.

Hastings, Royal East Sussex Hosp.—Jun. H.S. At rate of £100.

Hospital for Consumption and Diseases of the Chest, Brompton S.W.—H.P. At rate of £50.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively Also Med. Reg. £100.

Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.

Ilford, King George Hospital.—H.S. At rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. and H.P. Each £120.

Johannesburg Hospital, South Africa.—Radiologist. £1500.

Lancaster R and Jun. Res. H.S.'s. £175 and £1

Leamington al Hospital.—Res. H.S. £165.

Liverpool, City Infectious Diseases Hosp.—Asst. Res. M.O. £250.

Liverpool, Hahnemann Hospital, Hope-street.—Res. M.O. At rate of £100.

Liverpool and District Hospital for Diseases of the Heart.—H.P. At rate of £100.

London Clinic and Nursing Home, 20, *Devonshire-place, W.*—Asst. House Governor.

London Hospital Medical College, E.—Hutchinson Triennial Prize, 1935.

Maidstone, Kent County Ophthalmic and Aural Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £200.

Manchester, Ancoats Hospital.—Med. Reg. for Out-patient Dept.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Med. Reg. £50.

Manchester, City.—Asst. Tuber. O. £650.

Manchester, Royal Children's Hospital, Pendlebury.—Res. M.O. At rate of £125.

Manchester, St. Mary's Hosps.—Three H.S.'s. Each at rate of £50.

Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.

'c Municipal Hospital.—Res. H.P. At

Greenwich-road, S.E.—Asst. Surgeon to Dept.

National Temperance Hospital, Hampstead-road, N.W.—Surg. Reg. 40 gns.

Northampton General Hospital.—H.S. At rate of £150.

Oldham Royal Infirmary.—H.S. £175.

Paddington Green Children's Hospital, W.—H.P. and H.S. Each at rate of £150.

Preston, Lancashire County Council.—Asst. County M.O. £800.

Preston, Wrightington Hospital, Parbold.—Jun. Asst. M.O. £200.

Reading, Battle Hospital.—Res. Asst. M.O. £300.

Rochdale Jun. H.S. £200.

Rochester, .—H.S. At rate of £175.

Romford, Res. M.O. £200.

Royal Ey us, Southwark, S.E.—Sen. and . ınd £100 respectively.

Royal Fre W.C.—Res. Cas. O. Also Sen. Res. M.O. Each £150.

Royal London Ophthalmic Hospital, City road, E.C.—Out-patient Officer. £100.

Royal Naval Medical Service.—Vacancies.

Salford, Hope Hospital.—Res. M.O. £400.

Salvation Army, Mothers' Hospital, Lower Clapton-road, Clapton, E.—Jun. Res. M.O. At rate of £60.

Southampton, Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.

Southampton, Royal South Hants and Southampton Hospital.—H.S. At rate of £150.

Sutton, Surrey, Sutton and Cheam Hospital.—Res. M.O. At rate of £150.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. Res. and Jun. Non-Res. H.S. At rate of £150 and £100 respectively.

Worcester County and City Mental Hospital, Powick, near Worcester.—Sen. Asst. M.O. and Deputy Med. Supt. £600.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Meltham (Yorks.) and at Newtyle (Forfar).

NOTES, COMMENTS, AND ABSTRACTS

ASPECTS OF AMŒBIASIS.

MUCH valuable information is to be found in three papers [1] [2] [3] on amœbiasis which have reached us in reprint form since the appearance of our last annotation on the subject.[4]

Dr. P. H. Manson-Bahr [1] analyses 329 proven cases of intestinal amœbiasis treated by him between 1920 and 1931 in the Hospital for Tropical Diseases in London. These comprise acute and chronic examples of the disease, but as would be expected in tropical practice in this country cases of long duration and extreme chronicity predominate. This is especially so in this series which includes many ex-Service men and pensioners who sought treatment in the years immediately after the war.

TREATMENT.

Taking the various remedies seriatim, Manson-Bahr offers the fruits of his experience with each. He says of emetine injections: "Though the immediate effects of therapeutic injections of emetine are striking enough, yet this drug alone does not eradicate the infection." This is an important point which deserves more general recognition, especially abroad, if relapses in these cases are to be avoided. While emetine injections have a dramatic effect in acute and early stages of the disease, cases which are chronic and old-standing show poor results when so treated, and, more important still, those acute cases which were apparently "cured" initially often relapse within 12 months, or suffer from hepatitis and liver abscess later. There appears to be no relation between the total dosage and the relapse rate, for recurrences occur even in cases which have actually manifested signs of emetine poisoning. This point was investigated by Manson Rennie.[5]

With the introduction of emetine-bismuth-iodide (E.B.I.) therapy better results were obtained, but here again there were relapses in cases treated with this drug alone. Of Manson-Bahr's series of 134 cases thus treated 10 relapsed within 6 weeks, and 3 after as many as 9 separate 30-grain courses of E.B.I.—an indication of "emetine-fastness" on the part of *Entamœba histolytica*. Three cases were subsequently readmitted with liver abscess.

In 1925 a new drug called yatren was tried in this country. It consists of a close combination of iodine with oxyquinolin-sulphonic acid and 20 per cent. sodium bicarbonate, the iodine being so firmly combined that it is not split off by boiling, nor decomposed in the body. It can be administered in the form of pills or cachets, or by enema, the last being the method of choice when it is given in a 2½ per cent. solution. Between 1926 and 1931 no less than 181 patients were given combined E.B.I. and yatren treatment. The results of this combined method were such an advance on anything heretofore achieved that it will probably be many years before the method is superseded. Only two relapses were reported in this series, both of which yielded to a second course successfully.

Emetine per-iodide, a less nauseating drug, finds a place in the treatment of women and the more debilitated subjects, combined with yatren lavage. Stovarsol, so popular on the continent, is a doubtful specific but has a place in "after-treatment."

In conclusion, Manson-Bahr raises an important question in asking what criterion should be taken in assessing a definite cure. He is clearly right in believing that time alone can show, after testing various forms of treatment on a large number of *proven* cases. Active or cystic forms of *E. histolytica* were found in stools or sigmoidoscopic scrapings in all the cases he analyses.

AMŒBIASIS OF THE LIVER.

A second paper by Dr. Manson-Bahr and one by Mr. T. P. Kilner both deal with amœbiasis of the liver. Emphasising the extraordinary number and variety of signs and symptoms which may be manifested the former[2] recalls the dictum of Sir Patrick Manson that the diagnosis of liver abscess should always be carried at the back of one's mind. To quote figures, out of 45 cases only 3 showed any external bulging in the chest wall. In 40 cases the abscess was situated postero-superiorly in the right lobe—a fact which gave rise to discussion as to why that should be the site of election. In 45 per cent. of cases *E. histolytica* was found in the stools. The utility of radiography is emphasised, particularly in the demonstration on screening of elevation, fixation, or limited diaphragmatic movement on the affected side. "Doming" of the diaphragm was evident in one-third of the cases.

Manson-Bahr puts forward an interesting theory of the formation of liver abscess. He holds that it arises by the formation of necrotic foci in so-called hepatitis. Each focus consists of a "nest" of amœbæ, probably formed by fission of one original penetrating amœba, lying in the centre of each necrosing area. An early suppurative stage follows which may occur independently of active bowel infection. The necrotic tissue cytolised by the action of the amœbæ is sterile in a bacterial sense, and the amœbæ being still active are vulnerable to emetine in this stage, and the necrosis resolves without drainage. In the next stage the abscess cavity contains sterile pus and the lining walls active amœbæ, and therefore aspiration plus emetine therapy will do good. The final stage is one in which—possibly from lack of oxygen—the amœbæ are no longer active, the cavity is large, and secondary infection via the blood stream occurs. Open operation then becomes the only method of treatment, and later combined E.B.I. and yatren may be used to prevent reinfection from any uneradicated bowel infection.

Both writers describe the various measures of aspiration in detail, and Mr. Kilner[3] describes the technique of the open operation. He compares the uninfected amœbic abscess with the cold tuberculous abscess, and points out the similarity in treatment by aspiration in both conditions. Exploratory needling is the first step in surgical treatment, and the striking of pus also clinches the diagnosis. Once pus is found aspiration can be proceeded with and, if necessary, open operation performed.

For needling and aspiration local anæsthesia suffices as a rule, and causes no distress to the patient, even when as much as 1½ to 2 pints of pus are aspirated. Sometimes, however, pain is felt by the patient, and may be of two types. It may be either short, sharp, and due to needle pressure on a tightened liver capsule, or on the diaphragm, or persistent, cramp-like, and referred to the right shoulder. The latter type calls for general anæsthesia, and gas-and-oxygen apparatus should be kept close at hand.

Potain's aspirator is the best type to use when much pus requires aspiration, and with patience and care little blocking of the cannula by debris is found to occur. Where secondary infection is established the open operation with rib resection is essential.

These papers epitomise in plain language the most modern methods in treatment, both medical and surgical, of intestinal and hepatic amœbiasis. It remains for the medical profession in general to get these cases under treatment early. Fortunately it is beginning to be realised that amœbiasis may often be encountered in the temperate zone as well as in the tropics and subtropics,[4] and the condition is correspondingly less often overlooked.

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[1] Proc. Roy. Soc. Med., 1931, xxiv. (Sect. Trop. Dis., p. 46.)

[2] Ibid., 1931, xxv. (Sec. Trop. Dis., p. 1.)

[3] Ibid., p. 10.

[4] THE LANCET, 1931, ii., 1419.

[5] Ibid., 1922, ii., 1374.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, April 5th.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Mr. W. H. Ogilvie: 1. Fracture of Cervical Spine. 2. Tuberculous Disease of Pubis. Mr. H.J. Seddon: 3. Successful Arthroplastics in Old Case of Still's Disease. Mr. N. St. J. Buxton: 4. Pathological Specimen of Chondroma of Tendon Sheath. Mr. E. P. Brockman: 5. Post-operative Result of Case Shown Previously. Dr. E. Henrietta Jebens: 6. Myeloma of Tendon Sheath. Mr. R. C. Elmslie: 7. Traumatic Dislocation of the Hip Followed by Coxa Plana. Other cases will be shown.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Dr. Ernest Jones: *Medical, Theological, and Popular Views Concerning the Nightmare.* A discussion will follow in which Dr. William Brown, Prof. C. G. Seligman, and others will take part. Dr. R. O. Moon (for Dr. B. Farrington): The Preface of Andreas Vesalius to the De Fabrica. 8.30 P.M., SURGERY. Paper: Mr. R. E. Kelly: The Use of the Cinematograph in the Teaching of Surgery. Films will be shown by Mr. Kelly and Mr. W. H. Ogilvie.

THURSDAY.—8 P.M., TROPICAL DISEASES AND PARASITOLOGY: MEDICINE. Discussion: The Megalocytic Anæmias of Tropical and Non-tropical Countries. Openers: Dr. N. Hamilton Fairley, Dr. Lucy Wills, Dr. G. W. Goodhart, and Dr. L. J. Witts. The discussion will be preceded by an Illustrative Demonstration by Dr. Hamilton Fairley. Members of the Sections of Obstetrics and Gynæcology and Pathology are specially invited to attend.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.)

WEST KENT MEDICO-CHIRURGICAL SOCIETY, Miller General Hospital, Greenwich.

FRIDAY, April 8th.—8.45 P.M., Mr. A. Walker: Danger Signals in Midwifery Practice.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, April 8th.—8.30 P.M., Sir William Willcox: Toxic Jaundice and Antisyphilitic Treatment. Discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.6.

MONDAY, April 4th.—10 A.M. to 1 P.M., Gynæcological Ward, Surgical Wards, Genito-Urinary Operations, Skin Department. 2 to 4 P.M., Operations, Surgical Wards. Medical, Surgical, Gynæcological, and Eye Out-patients. 4.15 P.M. (Lecture) Sir Henry Simson: The Management of Pregnancy and Labour.

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Department. 2 P.M. to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Mr. Tyrrell Gray: Visceroptosis.

WEDNESDAY.—10 A.M. to 1 P.M., Medical Wards, Children's *Medical Out-patients, 2 P.M. to 4 P.M.,* Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases [illegible]

THURSDAY.—10 A.M. to 1 P.M., [illegible]
Fracture Demonstration. 2 [illegible]
Medical, Surgical, Genito-Uri [illegible]
4.15 P.M. (Lecture): Dr. [illegible]
and Treatment of I [illegible]

FRIDAY.—10 A.M. to 1 [illegible]
Patients, Dental [illegible]
Lecture. 2 P.M. to 4 [illegible]
and Throat [illegible]
Dr. Redvers [illegible]

SATURDAY.—9 A. [illegible] rations, Medical
Wards, Surgi [illegible] Out-patients.

The lectures at 4.15 P.M., on Mondays, Tuesdays, Thursdays, and Fridays are open to all medical practitioners without fee.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.

WEDNESDAY, April 6th.—3 P.M., Mr. C. Morson: Calculous Disease of the Urinary Tract.

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, April 7th.—4.30 P.M., Dr. Cuthbert Dukes: Classification of Cancer of the Rectum.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, April 8th.—4 P.M., Mr. F. W. Watkyn-Thomas: Points in the Acute Mastoid Operation.

SALFORD ROYAL HOSPITAL.

THURSDAY, April 7th.—Dr. C. J. Langley: Demonstration of Cardiac Cases.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, April 5th.—4.15 P.M., Prof. S. L. Baker: Postmortem Findings in Cases of Cardiac Failure.

FRIDAY.—4.15 P.M., Mr. J. P. Buckley: Demonstration of Surgical Cases.

ANCOATS HOSPITAL, Manchester.

THURSDAY, April 7th.—4.15 P.M., Dr. E. W. Twining: Radiology of Brain Lesions with Special Reference to Tumour.

ROYAL MATERNITY AND WOMEN'S HOSPITAL, Glasgow.

WEDNESDAY, April 6th.—4.15 P.M., Prof. James Hendry: Obstetrical Cases.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Jun. H.S. At rate of £12

Aylesbury, Royal Buckinghamshire Hospital.—Res. M.O. A rate of £200.

Babies' Club, Chelsea.—Asst. M.O.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—Tw H.P.'s and One H.S. Each at rate of £100.

Birmingham, Dudley-road Hospital.—Gynæcologist an Obstetrician. £750.

Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.

Blackburn Royal Infirmary.—Fourth H.S. £150.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. A rate of £120.

Bootle General Hospital, Derby-road, Bootle, near Liverpool.—Hon Laryngologist and Aurist.

Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.

[illegible] t. M.O. £250.
[illegible] Surgeon.
[illegible] —Jun. H.S. £150.
[illegible] .—H.S. At rate of £100
[illegible] *ses of the Heart and Lungs*
Victoria Park, E.—H.P. At rate of £100.

Colchester, Essex County Hospital.—H.S. £175.

Connaught Hospital, Walthamstow, E.—Sen. Res. H.S. At rat of £150.

Derby, Derbyshire Hospital for Sick Children.—Res. H.S. A rate of £130.

Derby, Derbyshire Royal Infirm.—H.S. for General Surgery. £150

[illegible] .H. £650.
[illegible] *il.*— [illegible]
[illegible] *Hos* [illegible]
[illegible] *nd* [illegible]
[illegible] of £50.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res M.O. and H.P. At rate of £150 and £100 respectively Also Med. Reg. £100.

Hospital for Women, Soho-square, W.—Res. M.O. At rate o £100.

Ilford, King George Hospital.—H.S. At rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. and H.P Each £120.

Johannesburg Hospital, South Africa.—Radiologist. £1500.

Lancaster Royal Infirmary.—Sen. and Jun. Res. H.S.'s. £17 and £ [illegible]

Leamingto [illegible] *pital.*—Res. H.S. £165

Liverpool, [illegible] —Asst. Res. M.O. £250

Liverpool, Hahnemann Hospital, Hope-street.—Res. M.O. A rate of £100.

Liverpool and District Hospital for Diseases of the Heart.—H.P At rate of £100.

London Clinic and Nursing Home, 20, *Devonshire-place, W.*—Asst. House Governor.

London Hospital Medical College, E.—Hutchinson Triennia Prize, 1935.

Maidstone, Kent County Ophthalmic and Aural Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £200.

Manchester, Ancoats Hospital.—Med. Reg. for Out-patient Dept

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Med Reg. £50.

Manchester, City.—Asst. Tuber. O. £650.

Manchester, Royal Children's Hospital, Pendlebury.—Res. M.O At rate of £125.

Manchester, St. Mary's Hosps.—Three H.S.'s. Each at rate of £50

Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200

Middlesborough, Holgate Municipal Hospital.—Res. H.P. At rate of £170.

Miller General Hospital, Greenwich-road, S.E.—Asst. Surgeon t the Genito-urinary Dept.

National Temperance Hospital, Hampstead-road, N.W.—Surg Reg. 40 gns.

Northampton General Hospital.—H.S. At rate of £150.

Oldham Royal Infirmary.—H.S. £175.

Paddington Green Children's Hospital, W.—H.P. and H.S Each at rate of £150.

Preston, Lancashire County Council.—Asst. County M.O. £800

Preston, [illegible] Jun. Asst. M.O. £200

Reading, [illegible] . £300.

Rochdale [illegible] H.S. £200.

Rochester [illegible] .S. At rate of £175

Romford [illegible] M.O. £200.

Royal Eye Hospital, St. George's Circus, Southwark, S.E.—Sen and Jun. H.S. At rate of £150 and £100 respectively.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. Also Sen. Res. M.O. Each £150.

Royal London Ophthalmic Hospital, City road, E.C.—Out-patient Officer. £100.

Royal Naval Medical Serv [illegible]

Salford, Hope Hospital.— [illegible]

Salvation Army, Mothers' [illegible] *Clapton* *E.*—Jun. Res. M.O. [illegible]

Southampton, Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.

[illegible] *Hants and Southampton Hospital.*— [illegible]).

[illegible] *Cheam Hospital.*—Res. M.O. At rate of £150.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. Res. and Jun. Non-Res. H.S. At rate of £150 and £100 respectively.

Worcester County and City Mental Hospital, Powick, near Worcester.—Sen. Asst. M.O. and Deputy Med. Supt. £600.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Meltham (Yorks.) and at Newtyle (Forfar).

NOTES, COMMENTS, AND ABSTRACTS

ASPECTS OF AMŒBIASIS.

Much valuable information is to be found in three papers[1, 2, 3] on amœbiasis which have reached us in reprint form since the appearance of our last annotation on the subject.[4]

Dr. P. H. Manson-Bahr[1] analyses 329 proven cases of intestinal amœbiasis treated by him between 1920 and 1931 in the Hospital for Tropical Diseases in London. These comprise acute and chronic examples of the disease, but as would be expected in tropical practice in this country cases of long duration and extreme chronicity predominate. This is especially so in this series which includes many ex-Service men and pensioners who sought treatment in the years immediately after the war.

TREATMENT.

Taking the various remedies seriatim, Manson-Bahr offers the fruits of his experience with each. He says of emetine injections: "Though the immediate effects of therapeutic injections of emetine are striking enough, yet this drug alone does not eradicate the infection." This is an important point which deserves more general recognition, especially abroad, if relapses in these cases are to be avoided. While emetine injections have a dramatic effect in acute and early stages of the disease, cases which are chronic and old-standing show poor results when so treated, and, more important still, those acute cases which were apparently "cured" initially often relapse within 12 months, or suffer from hepatitis and liver abscess later. There appears to be no relation between the total dosage and the relapse rate, for recurrences occur even in cases which have actually manifested signs of emetine poisoning. This point was investigated by Manson Rennie.[5]

With the introduction of emetine-bismuth-iodide (E.B.I.) therapy better results were obtained, but here again there were relapses in cases treated with this drug alone. Of Manson-Bahr's series of 134 cases thus treated 10 relapsed within 6 weeks, and 3 after as many as 9 separate 30-grain courses of E.B.I.—an indication of "emetine-fastness" on the part of *Entamœba histolytica*. Three cases were subsequently readmitted with liver abscess.

In 1925 a new drug called yatren was tried in this country. It consists of a close combination of iodine with oxyquinolin-sulphonic acid and 20 per cent. sodium bicarbonate, the iodine being so firmly combined that it is not split off by boiling, nor decomposed in the body. It can be administered in the form of pills or cachets, or by enema, the last being the method of choice when it is given in a 2½ per cent. solution. Between 1926 and 1931 no less than 181 patients were given combined E.B.I. and yatren treatment. The results of this combined method were such an advance on anything heretofore achieved that it will probably be many years before the method is superseded. Only two relapses were reported in this series, both of which yielded to a second course successfully.

Emetine per-iodide, a less nauseating drug, finds a place in the treatment of women and the more debilitated subjects, combined with yatren lavage. Stovarsol, so popular on the continent, is a doubtful specific but has a place in "after-treatment."

In conclusion, Manson-Bahr raises an important question in asking what criterion should be taken in assessing a definite cure. He is clearly right in believing that time alone can show, after testing various forms of treatment on a large number of *proven* cases. Active or cystic forms of *E. histolytica* were found in stools or sigmoidoscopic scrapings in all the cases he analyses.

AMŒBIASIS OF THE LIVER.

A second paper by Dr. Manson-Bahr and one by Mr. T. P. Kilner both deal with amœbiasis of the liver. Emphasising the extraordinary number and variety of signs and symptoms which may be manifested the former[2] recalls the dictum of Sir Patrick Manson that the diagnosis of liver abscess should always be carried at the back of one's mind. To quote figures, out of 45 cases only 3 showed any external bulging in the chest wall. In 40 cases the abscess was situated postero-superiorly in the right lobe—a fact which gave rise to discussion as to why that should be the site of election. In 45 per cent. of cases *E. histolytica* was found in the stools. The utility of radiography is emphasised, particularly in the demonstration on screening of elevation, fixation, or limited diaphragmatic movement on the affected side. "Doming" of the diaphragm was evident in one-third of the cases.

Manson-Bahr puts forward an interesting theory of the formation of liver abscess. He holds that it arises by the formation of necrotic foci in so-called hepatitis. Each focus consists of a "nest" of amœbæ, probably formed by fission of one original penetrating amœba, lying in the centre of each necrosing area. An early suppurative stage follows which may occur independently of active bowel infection. The necrotic tissue cytolised by the action of the amœbæ is sterile in a bacterial sense, and the amœbæ being still active are vulnerable to emetine in this stage, and the necrosis resolves without drainage. In the next stage the abscess cavity contains sterile pus and the lining walls active amœbæ, and therefore aspiration plus emetine therapy will do good. The final stage is one in which—possibly from lack of oxygen—the amœbæ are no longer active, the cavity is large, and secondary infection via the blood stream occurs. Open operation then becomes the only method of treatment, and later combined E.B.I. and yatren may be used to prevent reinfection from any uneradicated bowel infection.

Both writers describe the various measures of aspiration in detail, and Mr. Kilner[3] describes the technique of the open operation. He compares the uninfected amœbic abscess with the cold tuberculous abscess, and points out the similarity in treatment by aspiration in both conditions. Exploratory needling is the first step in surgical treatment, and the striking of pus also clinches the diagnosis. Once pus is found aspiration can be proceeded with and, if necessary, open operation performed.

For needling and aspiration local anæsthesia suffices as a rule, and causes no distress to the patient, even when as much as 1½ to 2 pints of pus are aspirated. Sometimes, however, pain is felt by the patient, and may be of two types. It may be either short, sharp, and due to needle pressure on a tightened liver capsule, or on the diaphragm, or persistent, cramp-like, and referred to the right shoulder. The latter type calls for general anæsthesia, and gas-and-oxygen apparatus should be kept close at hand.

Potain's aspirator is the best type to use when much pus requires aspiration, and with patience and care little blocking of the cannula by debris is found to occur. Where secondary infection is established the open operation with rib resection is essential.

These papers epitomise in plain language the most modern methods in treatment, both medical and surgical, of intestinal and hepatic amœbiasis. It remains for the medical profession in general to get these cases under treatment early. Fortunately it is beginning to be realised that amœbiasis may often be encountered in the temperate zone as well as in the tropics and subtropics,[4] and the condition is correspondingly less often overlooked.

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[1] Proc. Roy. Soc. Med., 1931, xxiv. (Sect. Trop. Dis., p. 46.)
[2] Ibid., 1931, xxv. (Sec. Trop. Dis., p. 1.)
[3] Ibid., p. 10.
[4] THE LANCET, 1931, ii., 1419.
[5] Ibid., 1922, ii., 1374.

"LOOSE MILK."

A COMMISSION of inquiry in New York City has apparently had no difficulty in deciding that loose milk—i.e., milk not sold in bottles or sealed receptacles—is a danger to health. A series of excellent photographs published in its report[1] illustrates the various ways in which contamination may take place. At the same time the arguments in favour of the retention of milk in this form are set out very fairly and at length. The main one is the low cost, and in a survey it was found that of poor families about half used loose milk and that half of all the milk they used was of this type, compared with less than a quarter for the entire market. The report includes the results of bacteriological examinations of loose milk and a comparison with those of bottled milk. The commission considered various devices for diminishing the dangers of loose milk but found none satisfactory. It comes as rather a surprise to learn that loose milk is still purveyed in more than 62,000 retail establishments in New York City; this includes 19,121 grocery stores, 16,958 restaurants, and 12,863 confectionery stores. In a particular month (February, 1927) the loose milk sold was about 47 per cent. of the total distribution of the metropolitan area. The commission recommends that the sale of loose or dipped milk not consumed on the premises be prohibited, and it advocates a general drastic reduction in the sale of loose milk.

A FRAUDULENT YOUNG PERSON.

To the Editor of THE LANCET.

SIR,—A paragraph appeared under the above heading in your issue of Feb. 27th, p. 494, which leads me to write to you. A begging-letter writer, signing as Jean M. Aldridge, is using my name as a means of approach to medical practitioners. I wish to say that she is entirely unknown to me, but I understand that she is quite well known to the Charity Organisation Society, who recommend that those who receive her appeals should communicate with the police.

I am, Sir, yours faithfully,
M. J. FENTON.

Stockwell-road, S.W., March 30th, 1932.

ALCOHOL IN FEVER HOSPITALS.

IN various publications in the last few years Dr. J. D. Rolleston has cast legitimate doubts upon the value of alcohol in treatment. He abandoned its therapeutic use over a quarter of a century ago and, after his appointment as medical superintendent of the Western Hospital, under the London County Council, he was able to persuade his colleagues also to cease to prescribe it. In this hospital nearly 2600 oz. of brandy were consumed in 1925; this figure fell after Dr. Rolleston's appointment (in 1926) to 25 oz. in 1927, 1 oz. in 1928, and none at all in 1929 and 1930. The effect of this experiment he measures in the case-mortality rates,[2] comparing those in the Western Hospital with those in all the fever hospitals under the Council; in the latter, although no statistics of the consumption are available, alcohol, it is stated, is still used freely, especially in the treatment of diphtheria, enteric fever, and in the bronchopneumonia of measles and whooping-cough. Throughout the four years, 1927 to 1930, the case-mortality from these diseases (and from scarlet fever) was, in nearly every case, lower in the Western Hospital. In 1927 and 1928, in neither of which years was alcohol used in the treatment of diphtheria, the case-mortality of this disease was the lowest in the nine acute fever hospitals of the Council. Dr. Rolleston's conclusion is that not only was the recovery-rate not lowered by the omission of alcohol from the treatment, but that convalescence was as rapidly attained as in cases treated in other hospitals by various alcoholic beverages. No statistical evidence is given on this latter point—the rapidity of convalescence—while, as the number of cases upon which the mortality-rates are based are also not given, it is not possible to apply any formal statistical test as to the significance of the differences in recovery-rates; but, as 18 out of the 20 case-mortality rates are lower in the Western Hospital, there is little doubt that, on the average, the experience without alcohol is favourable. On the other hand it may be suggested that the figures prove almost too much. For instance, the case-mortality rates (per 100) for measles and whooping-cough are as follows:—

		1927	*1928*	*1929*	*1930*
Western Hospital	Measles	5·5	5·7	6·5	6·2
All the Council's fever hospitals		6·7	7·2	7·2	6·6
Western Hospital	Whooping-cough	7·6	4·7	15·0	5·0
All the Council's fever hospitals		10·9	9·3	15·3	7·7

In every case, it will be observed, the rates in the Western Hospital are lower. If these differences are significant one of two conclusions must be drawn. Either alcohol is not only of no therapeutic value but is actually detrimental, so that its withdrawal results in a more favourable mortality-rate; or some other factor is favourably affecting the mortality in the Western Hospital compared with the other hospitals—e.g., the type of patient admitted—in which case the experiment is not clear-cut. Inclusion of the absolute numbers of cases involved would enable Dr. Rolleston's figures to be subjected to a more satisfactory critical examination, while further evidence seems essential that in the comparison between the Western Hospital and the other fever hospitals all factors likely to affect case mortality, except the treatment with alcohol, are equivalent. At present it is not clear that the presence or absence of alcohol in treatment is the only factor involved.

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[1] Is Loose Milk a Health Hazard? Report of the Milk Commission Health Department. New York City. December, 1931. Pp. 255.

[2] L.C.C. Annual Report for 1930. Vol. iv., Part III. London: P. S. King and Son. 5s.

Appointments

City of London Maternity Hospital: WYNN-WILLIAMS, N. M.B., B.S. Lond., Assistant Resident Medical Officer CAIRNS, D. R., M.B., B.Ch. Belf., Senior Resident Medica Officer.

Queen Charlotte's Maternity Hospital: HECTOR, FRANCIS, M.D., Ch.B. Bristol, Senior Resident Medical Officer. STEPHEN, R. A., M.B., Ch.B. Aberd., Assistant Resident Medical Officer. CARLESS, Miss E. M., L.R.C.P. Lond., M.R.C.S., D.P.H., District Resident Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: ANDERSON, A. J. (P[illegible]an); HESKIN, R., M.B., Ch.B. N.U.I. [illegible]; and ROWLANDS, J. L., M.B., Ch.B. [illegible] Caernarvon).

Births, Marriages, and Deaths

BIRTHS.

BENTLIF.—On March 20th, the wife of P. Graeme Bentlif, M.A., M.B., B.Chir. Camb., of David-place, Jersey, of a son.

GARDINER-HILL.—On March 21st, at Wimpole-street, W., the wife of Dr. Harold Gardiner-Hill, of a son.

HUMPHERSON.—On March 24th, at Eccleston-street, Belgravia; the wife of V. W. Humpherson, L.D.S. R.C.S. Eng., of a son.

KENDALL.—On March 21st, at Buckingham-gate, the wife of A. Wallis Kendall, F.R.C.S., of a son.

LINDSAY.—On March 25th, at 47, Harefield-road, Brockley, the wife of Sidney S. Lindsay, M.B., B.S., D.O.M.S., of a son.

DEATHS.

HEBBLETHWAITE.—On March 18th, at Seven-arches, Lansdown-parade, Cheltenham, S. Montague Hebblethwaite, M.D., M.R.C.P.

PARKER.—On March 25th, at Rodney-street, Liverpool, Rushton Parker, M.B., B.S. Lond., F.R.C.S., Professor of Surgery, University of Liverpool, aged 84 years.

ROBERTSON.—On March 28th, Prof. George M. Robertson, M.D., F.R.C.P., F.R.C.S. Edin., aged 68.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

THE RÔLE OF THE HÆMOLYTIC STREPTOCOCCI IN INFECTIVE DISEASE.

BY C. C. OKELL, *M.C.*, M.B. CAMB., M.R.C.P. LOND.,
PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY OF LONDON, AND BACTERIOLOGIST TO UNIVERSITY COLLEGE HOSPITAL, LONDON.

LECTURE I.

THE HÆMOLYTIC STREPTOCOCCI AND THEIR MODES OF ATTACK.*

THE literature relating to the streptococci is almost unbelievably extensive. The editors of the exhaustive catalogue of streptococcal literature published by the Pickett Thomson Laboratories estimate that their completed work will contain more than 10,000 references. In the present state of knowledge it would be idle to pretend that any satisfactory integration of this material can be achieved, but everyone who has to deal with streptococcal disease, in the laboratory and field, must needs have his own view of the unities and essentials which shall be his guide when faced with actual clinical and epidemiological problems. In these lectures it is my purpose to present one such personal view. The subject at least falls within the compass of the Founder's Suggestions, as it will be generally agreed that there are few subjects of greater epidemiological interest than streptococcal disease.

Classification.

At the outset of any discussion of the streptococcal problem we are met by the fundamental difficulty of having to conduct an argument the terms of which are ill-defined. Practical knowledge in the prevention and treatment of streptococcal disease must advance slowly while definition and classification remain in this present unsatisfactory state. This has been so generally recognised during recent years that possibly more attention has been paid to classification than to any other aspect of the subject. It seems then that this necessary preliminary to further discussion should be considered in some detail.

The streptococcus first named by Billroth in 1874 and given a definite generic position ten years later by Rosenbach is not more difficult to define than other genera of bacteria. On morphological grounds alone there is little difficulty in including or excluding a given example from the genus. The difficulty arises when we try to assign to the streptococci specific names of any importance, particularly those which carry a pathological implication. The bacteriologist here as elsewhere in so much of his work must steer a precarious course between the Scylla of pathological and the Charybdis of botanical classification, keeping a weather eye on either bow. A number of methods present themselves which may be used in dividing the streptococci into subgroups, such as fermentation reactions, agglutination tests, hæmolytic tests, tests for pathogenicity in animals or the believed potentialities of the streptococci as judged from their effects in natural disease. Each of these methods calls for some consideration.

CLASSIFICATION BY FERMENTATION REACTIONS.

The attempt to classify the streptococci by means of fermentation tests was first made on an intensive scale in 1903 by Mervyn Gordon,[1] who showed that by the use of a comparatively simple series of chemical substances the streptococci commonly met with could be classified into a number of groups. The materials used were milk, neutral-red, sucrose, lactose, raffinose, insulin, salicin, coniferin, and mannite. Some three years later Andrewes and Horder[2] making use of Gordon's methods published their Study of the Streptococci Pathogenic for Man. This paper constitutes an important landmark of streptococcal literature, and deals with other aspects than fermentation reactions, but at the moment I shall only refer to their views on *classification*. Unfortunately neither Gordon nor Andrewes and Horder gave more than passing attention to Schottmüller's division of the streptococci into hæmolytic and non-hæmolytic, but it is obvious that by their method, what we should now call the hæmolytic streptococci were divisible into two groups to which, after a thoughtful discussion of the dangers of bacteriological classification, Andrewes and Horder rather inconsistently gave the specific names, based essentially on fermentation reactions, of *Streptococcus pyogenes* and *Streptococcus anginosus*.

Although Andrewes and Gordon found their *S. pyogenes* commonly associated with suppurative conditions and their *S. anginosus* with inflammation of the throat including scarlet fever, the conclusion to be drawn from their work is that, though Gordon's tests provide a valuable and consistent method of study they fail to classify the streptococci satisfactorily in terms of pathogenic potentialities. For example, with regard to the scarlet fever question, they state that they "failed to indicate one variant as constant in or peculiar to the scarlet fever throat." Another who from the thoroughness of his work demands consideration is W. L. Holman.[3] His method was a simplified one combining Gordon's tests with Schottmüller's blood-agar plate method, the fermentable substances he eventually employed, being lactose, mannite, and salicin. By this method Holman divided the streptococci into eight hæmolytic and eight non-hæmolytic varieties. In this way the matter was carried to a stage which Andrewes and Horder would have undoubtedly reached had they given more weight to Schottmüller's classification. Holman's conclusion as to the pathological value of his method is summed up in the statement that "the streptococci are not specific in their disease production, at least so far as I have been able to determine." I have recently examined some 30 hæmolytic strains from diverse streptococcal diseases on a large range of the fermentable substances generally used in the laboratory. Another 71 strains were examined by Holman's simplified method, but in neither series could I find any grouping that could be linked with the clinical condition. With regard to scarlatinal strains the only statement that can be made is that they generally fail to ferment mannite.

The hæmolytic streptococci all appear to ferment the simple carbohydrates, but their powers of attacking the more complex reagents vary greatly even among strains from the same type of disease. Individual strains are remarkably consistent but by no means always so.

We may conclude then that fermentation tests are useful in identifying a particular individual strain of hæmolytic streptococci, but fail in supplying a method of classification of pathological importance.

CLASSIFICATION BY AGGLUTINATION.

Agglutination tests provide a very delicate method for differentiating bacteria but one which may easily transcend the requirements of both taxonomy and pathology. One need hardly mention that such well-defined bacterial species as the toxigenic bacilli of diphtheria and tetanus can be divided into consistent serological subgroups by these means. Yet it is admitted that these subgroups are of little practical importance. It has recently been realised that, for other reasons also, great caution must be employed in applying serological methods to bacterial classification. The work of Arkwright, Weil and Felix, and others on the peculiar features of bacterial variation has shown that most bacteria have a complex antigenic constitution, above all that they may exist in a "phase" for a number of generations when one antigen is dominant, eventually undergoing a *reversible* change to a phase in which another character takes the leading place. Thus agglutination methods at the present time have become a means of study of the variable rather than the consistent characters of bacterial species. Until the consistent antigens of a species are analysed and separated from those that are accidental and variable no serious application of antigenic criteria to the classification of bacteria can be attempted. In the cases of such fully studied groups as the salmonellas and the pneumococci we have perhaps reached the necessary degree of analysis but this certainty cannot be claimed for the streptococci. There is abundant reason to suppose that the antigenic structure of the hæmolytic group of streptococci is complex, and we have probably to recognise that they possess group and specific and possibly rough and smooth antigens. The work of Lancefield,[4] while it may eventually supply a method of attack, for the moment only makes the serological classification of the streptococci more precarious. This worker has done something to analyse the antigens present in the hæmolytic streptococci. She has separated three different bodies of immunological importance: (1) an antigenic nucleo-protein which is non-specific, overlapping with similar antigens from non-hæmolytic streptococci, pneumococci, and even the staphylococci; (2) a "type-specific" protein peculiar to the strain or to a certain number of strains and which she states is non-antigenic; (3) a "species-specific" carbohydrate apparently common to all hæmolytic streptococci and similar in general properties to the "hapten" of the pneumococcus, this being, of course, non-antigenic in the isolated state but able to act as a specific antigen when linked normally with bacterial protein. The quantitative redistribution of these antigenic factors in the history of an individual strain may obviously be a source of serological confusion.

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* The first Milroy lecture for 1932, delivered before the Royal College of Physicians of London on Feb. 18th.

There is a good deal of evidence, though admittedly of an indirect nature, that suggests that the agglutinogenic constitution of bacteria may change during sojourn in the body, particularly if they are present without actively producing disease. Eagles [5] came to the conclusion that as cases of scarlet fever progress the streptococci from them become gradually and progressively less specific in their agglutination, so that in the end they can no longer be identified by these means. Gunn and Griffith's [6] observation that in 50 out of 100 scarlet fever cases a change of type took place during the course of the disease is explained by them as due to reinfection, but the alternative view might be taken that the individual strains had undergone a change of antigenic structure. It is possible too that the diphtheria bacillus undergoes a similar change of serological constitution in the throats of convalescents from diphtheria. The mechanism of such changes if they really take place is difficult to imagine, but Griffith's [7] amazing observation that one serological type of pneumococcus can acquire by contact the substance chemically and serologically characteristic of another type and moreover become permanently endowed with it, teaches us how little we yet understand of the principles underlying agglutination.

The technical methods used in much of the work done on agglutination makes little allowance for the complexity of the problem. They are arbitrar methods which are likely to emphasise certain ant genic properties at the expense of others and th give a distorted notion of the true state of affair Owing to the almost universal tendency of strept cocci to sediment rapidly when suspended in salin considerable difficulty has been met with in carryin out satisfactory agglutination tests with them. I the last decade these difficulties have been in a larg measure overcome and we are now in possession of body of results upon which some reliance can b placed. An array of workers, among whom a Gordon,[8] Bliss,[9] Havens,[10] Stevens and Dochez, and Griffith,[12] to name but a few, have shown th serological differences exist among the streptococ Nearly all these workers have focused on the proble of separating scarlet fever strains from hæmolyt strains of other origin. Opinions as to the success this attempt have varied greatly even among t workers themselves. The earlier view was th scarlatinal strains represented a stable and hom geneous subgroup, but this has been abandoned wi the advance of knowledge. In so far as there has bee any success in the identification of scarlatinal strai by agglutination it has been the outcome of t patient work of F. Griffith and his colleagues.

Griffith,[13] using a simple method which overcom most of the technical difficulties of streptococc agglutination, has succeeded in "typing" the stre tococci occurring in scarlet fever cases into four ma agglutination groups. Seventy per cent. of Griffith series of hæmolytic streptococci from scarlatinal cas were found to fall into these groups, leaving 30 per cen which form a miscellaneous group composed large of individualistic strains. The work has proved t more valuable because a number of other worke notably J. Smith,[14] G. R. James,[15] and Allison [16] ha accepted the same grouping while carrying out co current work, thus avoiding the confusion which often arises in independent investigations of th nature. In Griffith's series of 156 typeable scarlatin strains 6·4 per cent. fell into Type I., 36·5 into Type I 28·9 into Type III., and 28·2 into Type IV., and in more recent series of 600 cases examined by Allis 63·4 per cent. fell into one or other of Griffith's group 10·8 per cent. were Type I., 22·4 per cent. Type I 20·2 per cent. Type III., and 10 per cent. Type I Griffith formed the opinion that infections wi Types I. and II. tended to run a more severe cours and that Type II. infections were particularly ass ciated with complications, points not to be lost sig of in the epidemiology of the disease. Type II. w not at first found by Griffith except in connexion wi scarlet fever, but later it was found in cases of tonsi litis without rash and Allison found it in two cas where there was no history of the disease. Five cas of puerperal fever were reported by Griffith in whi the streptococci belonged to either Type I. or II In contrast to the high percentage of "typeable strains from scarlet fever cases, Allison, among 2 strains from streptococcal conditions other th scarlet fever, has recently found only 2 per cent. fall within Griffith's four types. The special intere of the work of Griffith and his colleagues is that shows that in this country at least there are serologic strains of hæmolytic streptococci which, from t point of view of scarlet fever, may be called *epidem* types. When they are met with they allow shrewdly to guess their source of origin and the potentiality as regards the production of scarlet feve The designation in this way of consistent types wi no doubt admit of the carrier problem being studie with greater precision. We are furnished with th ssier and marks of identification of the strains hich are most likely to give rise to mischief—at ast from the official public health standpoint. The sence of a strain from Griffith's four chief types ardly, however, amounts to a presumption of nocence in respect to scarlet fever, nor is its inclusion roof of its guilt.

McLachlan and Mackie,[17] though they took riffith's grouping as the basis of their work, found hat a minority of scarlatina streptococci were gglutinated by antisera for individual strains and hey observed no group agglutination. Absorption ests revealed the existence of agglutinogenic constituents common to the majority of hæmolytic streptococci isolated from various sources. I have also ound that absorption tests may be made to indicate a very general basic similarity among hæmolytic streptococci from different sources, particularly if heavy absorbing doses are used. McLachlan and Mackie expressed what seems to be the most reasonable view of the place of agglutination in relation to the general problem of classification when they said that "no serological distinction can be drawn between scarlatinal and other hæmolytic streptococci and a 'streptococcus scarlatinæ' group cannot be defined by serological methods." This view is not, as might appear at first sight, incompatible with that of Griffith.

The position is thus much the same as with the meningococci and pneumococci where in larger epidemics certain types tend to recur, yet in interepidemic periods the organisms may be serologically heterogeneous.

CLASSIFICATION BY HÆMOLYSIS.

Besredka[18] in 1901 and Marmorek[19] in 1902 pointed out that certain streptococci had the power of laking blood incorporated into the culture medium in which they were grown. There are two main methods for demonstrating this hæmolytic property of streptococci. The first was introduced by Schottmüller[20] in 1903. In this method a suitably distributed inoculum of streptococci is plated on nutrient agar into which is incorporated animal blood. It is not of great importance what animal is used as the source of blood. Sheep, horse, rabbit, and human blood have been used by different workers, and it is agreed that the capacity to hæmolyse the blood from these different sources is very similar though that from the horse and perhaps the rabbit seems to serve the purposes of the test better than others. It is, at times, not easy to draw a definite line between hæmolytic and non-hæmolytic streptococci grown on plates, and small variations in technique and in the constitution of the medium may produce divergent interpretations depending partly upon personal criteria. The detailed study of plate hæmolysis was undertaken by Theobald Smith and Brown[21] in 1915 and subsequently by Brown[22] himself in such detail that little further advance can be expected on this aspect of the streptococcal problem. The well-known method of classification used by these authors into α, β, and γ types has since been the basis of description of most of those who have studied the streptococci. In deference to practical necessities there has been a general tendency to simplify the classification into hæmolytic and non-hæmolytic forms, the former corresponding with the β-hæmolytic type or those which produce a clear zone of hæmolysis around their colonies, and the latter with those that do not fall clearly into the β-type. This method of division, though almost essential in everyday routine, evades in fact the most difficult issue of plate classification—the position of intermediate types.

The second method used in studying the hæmolytic power of streptococci avoids some though not all of these difficulties. This is the method of growing in fluid medium containing blood, which, like the plate test, was first seriously studied by Schottmüller. A convenient mode of carrying out this form of test which has been almost universally used in this country is that of M'Leod[23] who adds 0·5 c.cm. of a 5 per cent. suspension of red cells to a 15-hour culture in serum broth and examines for hæmolysis after an incubation of one and a half hours. There is no reason to doubt that hæmolysis indicated by solid or fluid medium is due to an identical property. The streptococci causing β-hæmolysis on plates give, in the great majority of cases, a positive M'Leod test, but whereas the interpretation of the peculiar appearances met with on plating often proves difficult, the result given by the M'Leod test is nearly always clear. In a recent series of comparisons carried out on 76 strains of "hæmolytic" streptococci, using rabbit blood for both tests, I only met with two strains in which a true contradiction occurred between the two tests, one M'Leod test positive and plate test negative and one the reverse. Four strains were doubtfully hæmolytic with both tests.

HÆMOLYSIS AND PATHOGENICITY.

Of all in-vitro properties bearing on pathogenicity, hæmolysis has attracted most interest. M'Leod,[24] who has perhaps given more attention to the study of this subject than any other modern worker, has summed up the position in the statement "that although the view that hæmolytic activity indicates virulence was unjustified, the opposite statement that there was no connexion between hæmolytic activity and virulence was as unsatisfactory."

There can be little dispute that the great majority of streptococci which cause serious human disease are hæmolytic. What then is the nature of the connexion between hæmolytic power and pathogenicity? The answer to this question, in the light of present knowledge, can only be tentative, but it is none the less worthy of consideration. But before it can be discussed some decision must be arrived at as to the nature of the methods of attack by which the streptococci produce disease.

The Offensive Weapons of the Hæmolytic Streptococci.

ERYTHROGENIC (RASH-PRODUCING) TOXIN.

In enumerating the offensive weapons of the hæmolytic streptococci I shall begin with the one perhaps now the best defined and understood—its exotoxin; as I intend to devote my next lecture entirely to this, I will rest content with a passing mention of it. I propose to call the toxin used in the Dick test and for active immunisation and responsible for the rash in scarlet fever the erythrogenic toxin of the hæmolytic streptococci. I have used this term because of the available adjectives "streptococcal" seems too general and "scarlatinal" too particular, while "Dick" toxin has legal limitations undesirable to accept for my present purpose. I may add that the erythrogenic toxin is neither hæmolytic nor pyogenic, nor is there any evidence that there is any direct connexion between the toxicity of streptococci and their pyogenic and invasive powers. The available evidence, which will be referred to later, suggests that the erythrogenic toxins of streptococci from the most diverse sources in human disease are immunologically identical.

PYOGENICITY.

The capacity for producing a pyogenic reaction may be taken as the lowest common denominator of the pathogenic activities of the hæmolytic streptococci and different as may be the *tout-ensemble* of the diseases they produce there is always to be found this element of pyogenicity. Robert Koch[25] in his great essay on Traumatic Infective Diseases, which inaugurated not only our modern knowledge of septic infection but much of our knowledge of bacteriology as well, describes the local "abscess" which occurs in rabbits when septic material is injected beneath their skin. "Such animals," he says, "have at first no symptoms of disease, a flat lentiform induration at the site of injection being all that is observed. After several days the induration extends in all directions but chiefly downwards and especially towards the abdomen and anterior extremities." If by the modern technique of intradermic injection hæmolytic streptococci are introduced, the series of events described by Koch takes place and there is little need to supplement his description except to add that in many if not in all cases a raised yellow purulent centre develops in the lesion. The histological changes are typical of all pyogenic inflammation even when visible pus is absent. For the purposes of a routine test I have injected 0·2 c.cm. of 16-hour broth cultures of several streptococci on the depilated skin of one rabbit. The reaction produced has been noted at the end of 24 and 48 hours. I have lately examined 71 strains of hæmolytic streptococci from different kinds of acute human disease, scarlet fever, erysipelas, septicæmia and various kinds of suppurations, and a few from apparently normal persons. Without exception all gave a reaction on the rabbit's skin, which I interpreted as pyogenic. Such a direct method of testing the pyogenic activity of bacteria seems to me at least as much value as any in-vitro criterion of "virulence" and is a more consistent test than intravenous injection.

Pyogenic activity is of course characteristic of many bacteria other than the hæmolytic streptococci, being also shown by the staphylococci, *Pseudomonas pyocynaca* and *Bacterium coli,* and it may be noted that these organisms are often hæmolytic as judged by growth on blood plates. The non-hæmolytic streptococci and pneumococci also often have the same power, though in a small series of these that I have examined rabbit reactions are produced with less certainty and seem in general to be less marked than in hæmolytic group. Though perhaps we cannot say that *all pyogenic streptococci are hæmolytic,* I think we are on safer ground in asserting that all hæmolytic streptococci are pyogenic. If, however, we could assume that the so-called non-hæmolytic streptococci which are pyogenic (including the pneumococci) were in reality endowed with an endocellular hæmolysin—the connexion between hæmolysin and pyogenicity might be brought still more close. Cole[26] has shown that active hæmolytic extracts can be obtained from the bodies of pneumococci by dissolving them in sodium cholate, or by allowing them to autolyse, or by freezing or by drying and grinding, and such may be true of the other non-hæmolytic streptococci that are also pyogenic.

It would certainly be a great simplification of our views on the pathogenicity of the streptococci if we could identify "hæmolysin" with the pyogenic property. A principle which has the characteristic power of hæmolysing the delicate red corpuscles might also, particularly if in suitable concentration, be considered likely to be able to damage or destroy other living cells particularly if in suitable concentr tion. There are a number of instances illustrati this, the hæmolytic toxin of Welch's bacillus al produces a local necrotic reaction in the skin a guinea-pig. An immune serum prepared again the red cells of an animal will produce local destructi of tissue when injected into that animal. Saponi which are hæmolytic in very weak dilution cau local necrosis of the skin when used in higher but st moderate concentrations, and the same holds f snake venoms. Perhaps the instance nearest to o present point is that of the newly studied toxin the staphylococcus. The pyogenic staphylococ also possess a hæmolytic property. Staphylococc *toxin, as Burnet[27] and others have shown, is* hæmolytic toxin in which hæmolytic power a toxicity as measured by the reaction produced in t skin of animals run parallel. This reaction too seer indistinguishable in essential pathology from t pyogenic reactions produced by the living staphyl coccus. R. T. Grant and I have recently carri out some experiments on the action of this tox on human beings. It is admittedly not easy produce pyogenic reactions by the introduction sterile materials into living tissue. Those substanc which appear most effective for the purpose a powerful protoplasmic poisons and coagulants su as the soluble salts of mercury and silver—su substances as produce and rapidly kill a small mass *cells while leaving the surrounding tissue* relative untouched and reactive. If the toxin of the staph lococcus is pricked into the human skin with a need as used by Thomas Lewis in his investigation on t injury reactions of the skin, a small pustule is produc similar in character to that produced by a stro *solution of silver nitrate introduced in the* same wa Here then we have a toxin which is both hæmoly and pyogenic though it would, of course, be prematu to claim that the living staphylococcus owes pyogenic properties entirely to this toxin. M'Le quite clearly recognises the streptococcal hæmoly as a toxic material, indeed he and Channon[28] use t term "thermo-labile toxin" for it. They ev suggest that this toxin in all probability is responsi for the invasive properties of the streptococci a they very properly draw attention to the ov emphasis that has been laid in recent years on t importance of the erythrogenic toxin in the gene problem of streptococcal pathogenicity. It shou have been abundantly clear by now that it pyogenicity and invasive capabilities that constitu the most dangerous and consistent weapons of t *streptococci, and that erythrogenic toxicity is on* a conspicuous though not in itself a very maligna feature in scarlet fever and in stray cases of oth forms of streptococcal disease.

If, however, we try to identify the hæmolysin wi the pyogenic principle of streptococci by direct expe ment we meet with difficulties which so far have n been overcome. This may in part be due to the fa that the streptococcal hæmolysin is one of the m labile of all immunological bodies and is extrem difficult to hold in high concentration sufficient long for the purposes of animal experiment. A final preparation of it has relatively low hæmoly activity and there is reason to suppose that duri the growth of streptococci much of it is destroyed rapidly as it is made. I have recently made ma efforts to demonstrate that the hæmolysin of strept cocci is also pyogenic, always up to now with a negati or at least equivocal result. What little is known the toxic properties of the streptococcal hæmolys has been obtained from a study of its action wh ntroduced intravenously into animals. Its effect nder these conditions is closely similar to that produced by the intravenous injection of any substance *ntravenously* into an animal the blood of which it s capable of lysing. If the dose is great rapid death ensues, presumably caused by intravascular hæmolysis, and if the dose is small and repeated, as M'Leod and McNee[29] have shown, anæmia gradually develops. These effects, however, give us no link with natural streptococcal disease unless it is with the signs of intravenous hæmolysis or of anæmia which are occasionally observed in certain severe and rare cases. The intravenous injection of animals with hæmolytic toxin of Welch's bacillus would give us equally little clue to the characteristic effects observed in ordinary gas gangrene which are easy to observe when the toxin is introduced locally into tissues in doses which do not cause a too rapid death of the animal.

If the search for a "pyogenic toxin" has been disappointing, that for a pyogenic antibody has proved equally so. We have tested the neutralising power of sera prepared in many different ways against the pyogenic effects of streptococci in the rabbit's skin. Serum of the ordinary antitoxic type, sera prepared using bacterial bodies, sera from man and animals recovered from acute streptococcal infection have equally failed to influence in a specific way pyogenic reactions in rabbits. A paper has just been published in which Todd[20] claims that he has been able to prepare neutralising serum against streptococcal hæmolysin. It will be interesting to see if the serum has any antipyogenic activity. It may be added, as germane to our general thesis, that Todd finds the hæmolysins of streptococci from diverse sources are antigenically the same.

There are many observations on record purporting to demonstrate that a local immunity exists to the pyogenic action of streptococci.

Cobbett and Melsome[21] state that the cutaneous lesions produced in the rabbit's ear by the injection of erysipelatous streptococci protect the parts directly affected against a subsequent inoculation, but their attempts to prove a general immunity are by no means convincing. Gay and Rhodes[22] obtained somewhat different results, finding that the skin of rabbits remained insusceptible to reinoculation of streptococci for three months or so, irrespective of the position of the original inoculation. In a still more recent study Amoss and Bliss,[23] like Cobbett and Melsome, found that the area previously inoculated acquired a partial resistance to subsequent infection while the rest of the skin remained fully susceptible.

Practically all the authors who have worked in this direction are agreed that any protection observed is temporary and some doubt its specificity. I am very doubtful how far such effects as these are due to specific forms of immunity and my own experiments on somewhat similar lines have never been able to convince me that a specific local immunity exists. The work of Cobbett and Melsome, of Gay and Rhodes, and of Amoss and Bliss as well as that of Birkhaug[24] was done with erysipelas strains and all these authors call the lesions they produced rabbit "erysipelas." This word is perhaps misleading, for some of the peculiar features of human erysipelas are only dimly reflected in the rabbit. Actually these reactions seem essentially the same as those originally described by Koch as following the introduction of septic material into the rabbit's skin and similar reactions may be produced by hæmolytic streptococci from practically any source including scarlet fever if they are introduced at a certain depth into the skin.

INVASIVENESS.

Invasiveness, the power rapidly to pass the local defences and infect the blood, is a property of the hæmolytic streptococci which in the present state of knowledge must be considered separately from pyogenicity, though it may well be closely connected with it. Characteristic though it be, this is perhaps the most variable of all properties of the streptococci, and we have good reason to suppose that it is not even constant in the individual strain. Most laboratory workers have found it a difficult and uncertain matter to exalt the lethality of streptococci by passage through animals. The facts of traumatic septicæmia in man suggest clearly enough that exaltation of lethalty may take place by passage through other human beings; but the exaltation seems of short duration and the streptococcus, so justly dreaded in the post-mortem room, appears to carry little danger in the laboratory where it is often manipulated still more intimately. Nor is virulence as tested by the power to cause fatal blood infection in animals any guide to invasive potentialities in man. The most virulent hæmolytic streptococcus for mice that I have examined killed in intravenous doses of 1/2.000.000 c.cm. Yet it was isolated from a trivial wound of the hand. With a strain isolated from a rapidly fatal case of infection contracted at autopsy, on the other hand, it proved very difficult to kill mice at all. The only experimental method which has been available for studying in the laboratory the invasive effects of streptococci has been by the study of the septicæmic effects of the organisms introduced intravenously, but though the end-result of streptococcal invasion is commonly septicæmia, invasive and septicæmic powers are not the same things and it is perhaps unfair to judge the defences against normal infection by the result of a surprise rear-guard attack. It is not however very easy to devise any other test which gives any information of value.

Anti-invasive immunity.—No subject in the immunology of the streptococci is more difficult than what is usually called "antibacterial" as distinct from antitoxic immunity. We might of course judge antibacterial immunity by a study of local pyogenic reactions, but I have already mentioned that so far only a negative answer has been obtained in this direction. The only available alternative method of study seems to be to determine if any method of immunisation can be devised which can protect such an animal as the mouse from the lethal effect of a parenteral injection of highly virulent streptococci. It is not always easy under these conditions to exclude the contribution of antitoxic immunity. Up to comparatively lately there has been some disagreement whether a specific "antibacterial" immunity to the streptococcus occurs. For example such experimenters as v. Lingelsheim[35] and Pasquale[36] stated they were unable to protect animals against invasion, while Killian,[37] Schloss and Foster,[38] among others, claimed to be more successful. Certainly nothing comparable to the clear-cut protective results of serum in the prevention of *pneumococcal* mouse infection has been recorded.

The work of Lancefield and Todd[39] has, however, done much to make the situation more clear. These workers have shown that under certain conditions effective immunisation can be obtained against the lethal effects of hæmolytic streptococci introduced intraperitoneally into mice.

They distinguish three kinds of colony variants as regularly occurring among all the hæmolytic streptococci they met with: (1) a matt virulent variety which contains a full complement of type specific protein; (2) a matt variant of attenuated virulence but still with its full complement of "type-specific" protein; and (3) a glossy *avirulent* variant which has lost most of its "type-specific" protein. In spite of the marked differences of virulence among these variants all had their full complement of specific carbohydrate and all produced erythrogenic toxin of similar potency. Yet passive protection of mice with serum prepared by immunising with killed bodies of the fully virulent or "matt attenuated" variants was obtained against the homologous strain of streptococcus, though not against hæmolytic streptococci in general. Sera prepared against the avirulent glossy variants did not prove protective. Experiments in which mice were actively immunised against the variants gave the same results.

It should be quite clearly understood that the protection depended not on the species-specific carbohydrate, but on the "type" specific protein, and that the "type" features of any individual strain are at most shared with only a few other strains. Thus nearly every streptococcus would call for an individual "antibacterial" prophylactic and therapeutic serum. It is perhaps possible that this opinion would have to be slightly modified if it were proved that Griffith's four agglutination types corresponded to Lancefield and Todd's type-specificity, but even if this were so it is difficult to envisage how it would affect practical serum therapy.

Some years ago Parish and I [40] noted the rather *remarkable effect of the ordinary antitoxin prepared* against the erythrogenic toxin of the hæmolytic streptococcus. If rabbits are injected intravenously with a virulent culture of the Dochez streptococcus they nearly always die, usually within two or three days. If, however, they have been previously injected with a sufficient dose of antitoxin they usually survive six days or more. Septicæmia is not prevented, for the streptococci can be grown from the blood of these animals with ease, but it is greatly modified in severity. The antitoxin-treated animals almost always developed subacute joint lesions and tended to die in a cachectic state at a later date. This form of protection was sufficiently consistent to form the basis of a test for antitoxin potency which has since been in extensive routine use. At the time we brought forward evidence which seemed strongly to suggest that the protection thus demonstrated was due to antitoxin itself and not to admixture with any other kind of antibody. We subsequently found that rabbits that die from early septicæmia may have a high level of toxin in their blood and it is not unreasonable to suppose that this is responsible for precipitating early death, at the same time explaining the effects of antitoxic serum. A similar explanation might be invoked for the success of prophylactic serum obtained by such earlier workers as Marmorek,[41] Bulloch,[42] Aronson,[43] and Besredka,[44] in rabbits and mice.

There is really nothing discordant between the observations of Lancefield and Todd and ourselves. The mechanism of the "antisepticæmic" effect of antitoxin is presumably quite different from that of the protective sera described by Lancefield and Todd, and though the action of antitoxin is not fundamental and specific, so far as it strikes at the invasive property of the streptococcus, it has the advantage of being practically applicable, whereas Lancefield and Todd's work clearly shows that "type" specific "antibacterial" sera are not.

It is reasonable then to suppose that no form of streptococcal antibody of prophylactic therapeutic activity of general application has ever been prepared against the hæmolytic streptococci except the antitoxin prepared against their erythrogenic toxin. This has a strictly limited use in therapeutics, and success in its administration will probably depend very much on how far the clinician can assess the contribution of erythrotoxæmia to the clinical features of his case.

Phagocytosis and counter-phagocytosis.—It has b customary in discussing the general defences agai pyogenic organisms to lay stress on the importanc cellular defences. It is in the background of m people's minds that pus represents the debris o fight of a somewhat personal nature between mi organism and leucocyte. I once heard an emin pathologist say a propos of this very argum "The Lord did not put leucocytes into the world nothing" and there seems little doubt that leu cytes and histiocytes must play some part in defence of the body against streptococci. W that part may be seems to me to be entir unexplained by any available knowledge thou the work of Gay [45] has done something to g definition to the problem. There is certainly ple of subject matter for the study of the place of c and tissues in resistance to infection, one of th being the apparent barrier action of granulat tissue on the extension of infection, an inquiry alre initiated by Gay and his colleagues, but there is immediate promise that such a study is likely contribute much to the practical prophylaxis a therapy of streptococcal disease.

Gay and Morrison [46] injected virulent streptococci i the pleural cavity of rabbits and observed the subsequ numerical increase of organisms in the exudate and extension of infection to the blood stream. If the pleu cavity was previously injected with materials as aleuronat strong egg white, both of which produce an exudate mai of polymorphonuclear cells, no significant protecti against streptococci resulted. If, on the other hand, m infusion or dilute egg white were previously injected exudate consisted mainly of histiocytes and the anim so prepared showed considerable resistance to the lo injection of streptococci.

It is, I think, equally impossible to define a specific mode of attack of the streptococci agai leucocytes. The term leucocidin has been devis to imply a substance obtained in filtrates from t streptococci which is supposed to have special toxic for leucocytes. Channon and M'Leod in their care work on the subject were unable to distingu hæmolysin from leucocidin, and more recently Al Evans,[47] though she recognises a leucocidal substan apart from hæmolysin, admits that the action of t substance is in itself small. Under these circu stances it appears to be safe for the moment to consid that if there is any marked action of streptococ filtrates on leucocytes it may be ascribed to the gene cytotoxic properties of the hæmolysin.

The Essential Unity of the Hæmolytic Streptococci.

I have attempted to give in crude outline what consider to be the more fundamental facts relati to the bacteriology of the hæmolytic streptococci a I would summarise them in the following way.

A large number of hæmolytic streptococci from t most diverse sources in human disease and al from apparently normal persons are essential similar having the same general morphological a biochemical properties. Agglutination tests, wh they show that serological differences exist amo members of the group, do not differentiate speci within the group.

There are three properties characteristic of t pathogenicity of the hæmolytic streptococci a these must be considered separately.

1. An erythrogenic (or rash producing) toxin, immunolo cally identical whatever the source from which the stra is derived. To this a neutralising serum is availab under the name of "scarlatinal antitoxin."
2. A pyogenic property, common to all hæmolytic strept cocci and perhaps closely related to streptococcal hæmolysi To this no antibody has so far been discovered.

3. An invasive property which may or may not be linked with the pyogenic property. To this also there is no general antibody available, though Lancefield and Todd's work suggests that antibodies to any particular strain could be prepared.

These three elements in the attack of the hæmolytic streptococcus, pyogenicity, toxigenicity, and invasiveness, vary in intensity from case to case. The strength of the host's defence against erythrotoxin and the site of the conflict also vary. These differences are sufficient to account for the varigated pathological and clinical patterns of human streptococcal disease.

If these views are accepted it must be admitted that the hæmolytic streptococci ordinarily met with in disease, in fact, constitute a species both on grounds of formal taxonomy and of pathology. With regard to the nomenclature of the species, Rosenbach's [48] term *S. pyogenes* has the unquestionable right of priority; hence it should replace Schottmüller's [20] term *S. hæmolyticus* which at present seems to have the greater vogue.

It would be quite unjustifiable to predict that other species of hæmolytic streptococci will not be established in the course of time. For example, the position of the so-called S. "epidemicus" and certain hæmolytic streptococci found in animals has not yet clearly been defined. The anaerobic hæmolytic streptococci have also to be given their proper position. But in the light of our present knowledge there is little doubt that it would save much confusion if bacteriologists would abstain from putting forward new species without good reason, and from what is almost worse—giving pseudo-specific names to what they would never themselves claim were species in any strict biological sense.

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THE GALL-BLADDER AND CARDIAC PAIN.*

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To quote Osler [1]: "The diagnosis of pain is based on the patient's statement; the estimation of the severity is made by observation; the recognition of the cause demands thorough study."

The title of this communication presents a difficulty, for though it is customary and convenient to attribute a particular kind of pain to a particular organ, the anatomical labelling of pain has certain disadvantages in that it may lead us to take up a false position. Having noticed that on occasions disorders of a certain organ are associated with a particular set of painful symptoms, we may acquire the habit of constantly attributing these symptoms to disorder of the organ with which we have previously found them associated.

On these grounds the term "cardiac pain" is open to criticism, but it is difficult to find a better. It is one of those dangerous terms which is dismissed by saying "everyone knows what you mean." "Sternal pain" has a good deal to recommend it, but the objection is that pain of cardiac origin is not always sternal. Also it is desired to include angina pectoris under the heading. Here again are difficulties. Various forms of angina pectoris are described in the text-books. The term "true angina pectoris" is often used, but it is of the same quality as the term "true epilepsy," and may be a convenient cloak for what is not well understood.

Parkinson,[2] in a communication on sternal pain, has said that "sternal pain is not synonymous with angina pectoris, but it can be held to include most of the cases so called. The diagnosis may be completed by deciding what pathological lesion is the cause of the pain. If the use of the term 'sternal' or 'cardiac' pain were more general even at the expense of the term 'angina pectoris' it would result in an earlier, more frequent, and more certain diagnosis of cardio-aortic disease."

Angina pectoris is defined by Douglas Powell [3] as a "sudden paroxysmal disturbance of the heart's function accompanied by severe pain, distressed breathing, and a vague and instant apprehension of death." Allchin [4] describes it as "acute distress in the chest which consists of at least three elements—pain, faintness, and a sense of dying."

On the whole there are fewest objections to the term cardiac pain. The situation of the pain may be sternal, but there may be no pain in the chest. In one of my cases of cardiac infarction there was agonising pain which the patient localised in his left humerus. The pain commonly comes on with effort, but in cardiac infarction the patient is often in bed.

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* Based on a communication made to the Association of Physicians of Great Britain and Ireland.

The pain may be slight and dismissed as trifling indigestion, or it may be so severe that the patient is collapsed and may even die during the attack. The term used must be as wide as possible in its meaning. The production of such pain is dependent on many and various factors. With a perfect coronary circulation and a perfect myocardium, there would not be an expectation of pain. There may be organic myocardial change due to syphilitic or other infection, or to degeneration of the coronary arteries. The coronary circulation may be imperfect either from the quality or the quantity of the blood that is circulated. But damage to the myocardium or coronary vessels does not necessarily mean pain. Several factors contribute to the symptoms. Cold air, annoyance, a hastily swallowed meal may be the exciting cause. But sometimes they fail to produce the pain that has occurred on other similar occasions. Further, a certain sensitiveness of the patient has to be considered, and in such circumstances the use of bromides may be regarded as one of the blessings of medicine.

It is a matter of common experience for the cardiac condition of the patient to be improved after the removal of a septic focus such as a dead tooth or a chronic appendix. The general health is improved after the operation, and if cardiac symptoms have been prominent they may become less pronounced or disappear. Several cases of serious disturbance of rhythm have in my experience and that of others been greatly improved after operation on the gall-bladder.

DISORDERS OF THE GALL-BLADDER.

With disorders of the gall-bladder we have several factors that are of special importance that may associate their symptoms with those of the heart. The gall-bladder may be a focus of chronic sepsis; further, it may contain stones, the passage of which is associated with severe pain. There may be some disorder of chemistry which causes widespread defects of circulation. There is the pain of gall-stone colic, one of the most severe of all pains. The heart and the gall-bladder are each capable of producing devastating and demoralising pain. Their innervation is from neighbouring regions of the central nervous system. It would be surprising if the symptoms were always so clear-cut that they could be given their true significance. Many practitioners have had cases which have perplexed them as to whether they were dealing with a cardiac or a gall-bladder disorder.

My own interest in the possible association began many years ago. A doctor came in haste to the hospital to take me to the bedside of an elderly Jewess whom he had been treating for angina pectoris. He said that she was in a bad attack and was dying. The patient was stout, pale, sweating, with a feeble pulse. She was in great pain, and pointed to the left side of the sternum, moving her hand about, and on questioning said she had pain in her arms. A large dose of morphia was given and a bad prognosis. Two months later I was asked by the doctor to admit the same patient to hospital as she was jaundiced and had a large gall-bladder. The gall-bladder was emptied of stones and drained. The attacks of pain ceased. Obviously I considered that I had made a mistake in diagnosis and determined not to be misled again.

Turning once more to the task of discussing cardiac pain, it can be said that the term "cardiac" can be applied to pain, in the origin of which the heart is directly or indirectly concerned, and that it is often impossible to say whether the connexion of the pain with the heart is direct or indirect. There is much to be discovered about cardiac pain. We have in the past been much impressed by the discovery of segmental areas of hyperæsthesia after an attack of cardiac pain but the phenomenon has still much that is obscure in its occurrence.

For instance, a man who had an attack of cardiac infarction was left with the liability to sternal pain on occasions. Usually the pain would come on when he was walking, especially on a cold day or soon after a meal. But after the pain had come on one of two things would happen. Either he would have to stand still until the pain had gone, or he could continue walking and the pain would go. He could never tell at the onset of the pain which he would have to do. The same patient, after having the sternal pain of effort, would have a local erythema of the skin over the area where the pain was felt, a curious phenomenon for which an explanation is lacking.

It cannot be said that there is any one feature of cardiac pain that is constant. Its situation is varied; its severity is of differing degrees; it may render the patient immobile, or he may be restless and even walk about as sometimes happens in cardiac infarction; it may last a few minutes or many hours. The sense of dying is not solely significant of angina pectoris, as the following case shows.

I am indebted to Mr. Robert Milne for the following notes.

A married woman, aged 56, was wakened by severe pain down the left side, arm, and trunk. It was followed by epigastric pain, nausea, flatulence, and diarrhœa. The pain lasted 5–10 minutes. There was the impression of impending death. Arteries, blood pressure, pulse, electrocardiogram were normal. An inflamed gall-bladder was drained and a solitary stone removed. Four years later she reports that she has had no return of pain and is in much better health. Here was the pain in the left arm and the sense of impending death.

Again, a medical man, who had reason to suspect his gall-bladder, was hurrying after a meal when he was seized with a bad attack of angina pectoris. According to his account it was an attack that could not be called by any other name. After the removal of his gall-bladder there has been no return of such symptoms, and he can more than hold his own with men of his age.

The following notes concern a medical man who was engaged in a busy practice.

At the age of 48 he had his gall-bladder emptied of stones and drained. The operation was followed by ten years of comfort. At the age of 58 there was recurrence of niggling pains and flatulence; there was also breathlessness and palpitation. At the age of 59 he was urged by a heart specialist to give up practice on account of "myocarditis," and he did so. At the age of 65 he had pneumonia and was very ill. At the age of 68 he first consulted me. He complained of anginal attacks. He had been seen by his doctor in two. He had lost consciousness in them. He could not go upstairs without pain. He could walk a little, but only on the flat on account of sternal pain. He also had bad attacks of colicky pain in the gall-bladder region with pain going into the right shoulder. In his own opinion he was having cardiac as well as gall-bladder symptoms. The skin was over-sensitive to pin over the right shoulder and the ulnar borders of both arms down to the little fingers. The pulse-rate was 76 per minute, and regular; the blood pressure was 138 systolic and 94 diastolic, and the examination of the heart revealed nothing abnormal.

I advised him to see a surgeon and approved cholecystectomy. The surgeon declined to operate unless he had the approval of a cardiologist. The cardiologist examined him; the electrocardiogram was pronounced to be within the bounds of normal, but on account of the general condition and his post-pneumonic lung the cardiologist advised against operation. The surgeon was approached once more and consented to operate, which he did, and with great skill and success removed the gall-bladder. Now, four years later, the patient is able to walk with comfort and the cardiac pain has gone. He still has some dyspepsia which is kept under control by medical measures.

There are several points about this case. At the age of 59 the heart was under suspicion. He has since gone through pneumonia and a severe abdominal operation. He himself as well as his medical advisers considered that he had cardiac as well as gall-bladder pain. The removal of the gall-bladder has removed his cardiac pain and a great deal of his physical infirmity. He has left only the symptoms of flatulence. Instead of being a haggard, miserable individual barely enduring an almost intolerable existence, he is bright, happy, and moderately active.

These cases illustrate the connexion between the symptoms which resemble those of a cardiac disorder and a pathological state of the gall-bladder.

A REVIEW OF THE LITERATURE.

The literature on the subject is copious, especially on the other side of the Atlantic. Brockbank[5] has pointed out that cholelithiasis is more common in patients who suffer from chronic heart disease. Mills[6] also, in reviewing the cases at St. George's Hospital, came to a similar conclusion, and Schroeder is quoted as having found the same condition. But this is not the condition with which I am here concerned.

Dr. de Havilland Hall[7] at the Medical Society of London described the case of a man between 50 and 60 years who suffered from excruciating pain in the region of the heart with much depression and faintness. Nitrites did not relieve but blue pill and mist. alba were beneficial. The condition was diagnosed as angina pectoris by himself and another physician. The pain continued for three to four months. Later there was an attack of gall-stone colic followed by a hepatico-bronchial fistula. The angina pectoris ceased.

Sir R. Douglas Powell[3] described one case in which hepatic colic was complicated with a fatal attack of angina pectoris, which it apparently excited; and another case of distinct hepatic colic with the passing of biliary grit, and at other times cardiac pain of an anginal kind with faintness and oppression.

Sir James Mackenzie[8] called attention to the fact that John Hunter was found to have gall-stones as well as degenerate coronary arteries; and has expressed his opinion that Hunter's earlier symptoms were biliary and not cardiac. He also described a case of angina pectoris which was improved by diet and cured by cholecystectomy.

In his remarks about biliary colic Osler[1] says: "Palpitation and distress about the heart may be present, and occasionally a mitral murmur occurs during the paroxysm, but the cardiac conditions described as coming on acutely in biliary colic are due to persistent myocardial degeneration not infrequent in patients with gall-stones."

Rolleston[9] has written that "the absorption of toxin from inflamed gall-bladder may cause myocarditis, angina attacks, and cardiac failure," and "angina and anginoid symptoms in patients with gall-bladder disease may be due to the exhaustion of a poisoned myocardium," and "the pain of biliary colic sometimes resembles angina."

The possible connexion between cardiac and biliary disorders has not escaped the notice of surgeons. Moynihan has used the phrase "cholecystitic heart." He refers to the irritability of the heart in such patients. Fint[10] attributes the irritability to the increase of circulating bile-salts.

It has happened to many physicians to decide that acute symptoms of the upper abdomen were due to cardiac infarction, and to stay the hand of the surgeon. In these cases acute disorder of the gall-bladder may be simulated. In America the subject has produced extensive literature. C. B. Leech[11] examined 116 proven cases of gall-bladder disease, exclusive of malignancy, before and after operation. His general conclusions were that there is no definite relationship between gall-bladder disease and disease of the cardiovascular system, and that the risk of operating on patients with gall-bladder disease and organic cardiac disorders was no greater than for other similar operations. On the other hand, R. H. Babcock[12] regards chronic cholecystitis as a cause of myocardial incompetence, and reports that improvement in the cardiac condition has followed operation.

S. A. Roberts,[13] writing on the diagnostic relations between the gall-bladder and the heart, concludes that (1) the patient with a diseased gall-bladder previous to any symptoms characteristic of cholecystitis with or without a cholelithiasis, may present symptoms of early heart failure or angina pectoris, or both; (2) in middle and old age heart failure or angina pectoris may be produced or accentuated by a diseased gall-bladder; (3) in both conditions the gall-bladder may be the cause, but all the signs and symptoms may appear cardiovascular in nature; (4) it is suggested that cholecystography may help to differentiate; (5) such patients should not be deprived of the benefits of surgery.

Graham,[14] quoted by Roberts, has written: "We have observed brilliant results in cases of heart disease followed by cholecystectomy after it had been determined that there was a pathological gall-bladder." Many others, including Lichty,[15] Willius and Brown,[16] have written and expressed similar views.

More recently Schwartz and Herman[17] have contributed a study of 109 cases of gall-bladder disease. Their investigation shows that 63·3 per cent. of cases had associated myocardial disease, and that the majority were obese; an infected gall-bladder and obesity are equally responsible for the myocardial damage of patients with chronic cholecystitis. Severe and mild cholecystitis, judged by clinical standards, have the same effect on the heart. Burns[18] in Canada also has called attention to the frequency with which cardiac symptoms simulate abdominal conditions.

It is clear that on the continent of North America the subject has attracted the attention of many observers, and that among those quoted, with one exception, the opinion is that there is some connexion between cardiovascular disorder and non-malignant disease of the gall-bladder.

CLINICAL ASPECTS.

Reference has already been made to four patients, two of whom were doctors, whose symptoms were those of angina. In all of them operation has been followed by relief of cardiac symptoms. Many other cases could be quoted from my own records, and still more from the records of other observers.

The difficulties of distinguishing between the symptoms of cardiac infarction and those of an acute gall-bladder have been mentioned, but the difficulty is increased by the fact that the same patient may be afflicted with both conditions. I am indebted to Dr. J. Parkinson and Dr. J. Fawcett for the notes of the following case.

Mr. A, in 1925, at the age of 61, had an attack in the night of mid-sternal pain which extended down both arms. One month later he was found to have a blood pressure of 170/100; the arteries were thickened and the aorta somewhat prominent on radioscopy. Wassermann reaction was negative. The electrocardiogram was deeply inverted in lead I., and during the next few months this became less pronounced. In 1927 he had some abdominal pain and tenderness for six months. In December, 1930, he had a severe attack of gnawing, sickening pain which took five minutes to reach its height and gradually became easier. A week later the pain returned, with vomiting. There was great abdominal tenderness in right costal margin and epigastrium. The next day there was a trace of bile in the urine as well as some albumin and sugar.

The diagnosis was made of gall-stones, cholecystitis, and pancreatitis. He declined operation at the time. He had several minor attacks, and a worse one in February, 1931. Four days later Mr. R. P. Rowlands operated. The conditions diagnosed were found, and fat necroses were present. He made a good recovery, and four months later reported that he was much better in all ways.

Dr. J. A. Ryle has kindly furnished me the following notes of four of his cases.

Mr. B, aged 58, a hard-working business man who had lived well and smoked heavily had for three years complained of retrosternal pain on cycling and walking fast. After being retired from his firm he began to have frequent anginal attacks, some of which lasted an hour. They were relieved by heroin but not by amyl nitrite. The pain was "gripping," and felt over the sternum and præcordium, and down the left arm. There was neither pyrexia nor pulse disturbance. Earlier in the year the blood pressure had been 190 systolic. Before the recent attacks it had been 160, and now it was 130. There was a trace of albumin in the urine. A coronary occlusion was suspected, and prolonged rest advised. Two days later he had a stomach-ache and was sick. The next day he was distended, and the day after he was operated on for an empyema of the gall-bladder by Mr. Cecil Rowntree. The latest report is that he has had uninterrupted good health since convalescence, and he is no more "puffy" than would be expected in a man who is badly out of training.

Mr. C, aged 67, had been treated satisfactorily for obesity, glycosuria, and myocardial symptoms. On Jan. 1st, 1931, he had an attack of severe epigastric pain and sickness, followed by pyrexia and rigidity of the right upper quadrant. No definite jaundice. There was a leucocyte count of 18,750. Acute cholecystitis was diagnosed, and as the symptoms were abating and the patient was not a good subject, operation was not advised. Four days later he was seized with severe anginal pain radiating down the left arm, which lasted a long time. The attack left him exhausted and frightened. The pulse remained slow and regular 60 to the minute. No pericardial friction, BP 105/90, a slight rise in temperature. Coronary thrombosis was suspected. During the next 12 months he had several attacks, and one was accompanied by anginal symptoms. Another was very severe, and was followed by rather intense jaundice but no anginal symptoms. Since then he has been wonderfully well.

Mr. D, aged 69, had had an attack of abdominal pain with jaundice seven years before. Two years later he began to have anginal attacks, the pain being to the right of the sternum and radiating into the right side of the neck and jaw. The blood pressure was 170/120. From this time he could not walk faster than two miles an hour without inducing pain. He had two attacks of biliary colic with pyrexia, a palpable gall-bladder, and a leucocyte count of 12,300. The gall-bladder did not fill with the dye and the electrocardiogram was normal. A large thickened gall-bladder containing stones was removed. Six days later he had a typical attack of coronary thrombosis with sternal pain radiating to the left side of jaw, neck, and shoulder. There was slight pyrexia, pericardial friction, and three days later a small pulmonary infarct. He made a satisfactory but slow recovery but has remained incapable of effort.

Miss E, aged 46, a hard-working energetic woman, had in 1927 a typical attack of coronary thrombosis with pain referred to the left suprascapular region, with a pulse of 120 and a temperature of 100·4°, and the next day a pericardial friction. Later the electrocardiogram confirmed. At this time and frequently since there has been tenderness in the gall-bladder region, and occasionally there has been spontaneous pain there. She has frequently been better after courses of urotropine. The blood pressure has never been raised, and there is no evidence of arterio-sclerosis.

The following notes are those of a patient whom I saw recently with Dr. A. Clark-Kennedy and Dr. D. Henning Belfrage.

Miss B. K., aged 64, was seen by Dr. Belfrage in a typical attack of angina; later she was jaundiced. Recently she has had pain in the chest and throat chiefly on walking. She was now able to walk only a few yards and very slowly. She has also had several attacks resembling gall-stone colic. She had been radiographed by Dr. Cecil Bull, and the gall-bladder was shown to be thickened and containing stones. An electrocardiogram had been done which showed a left-sided preponderance and inversion of T-wave in lead II. She was operated on by Mr. Claude Frankau, who removed a thickened gall-bladder containing stones. Two months after the operation she is reported to be in excellent health and able to walk uphill and upstairs without pain, and is very busy getting into a new house and moving furniture about.

These cases illustrate sufficiently well that it is possible for the two conditions to occur in the same subject. It is also significant that in these cases and in those quoted earlier the gall-bladder may be closely concerned with the production of cardiac pain.

It has to be remembered that the two conditions occur at the same time of life; that the indigestion of the gall-bladder patient has flatulence for its most constant symptom; that gastric flatulence is a serious trouble to the cardiac patient; and that cardiac symptoms are commonly relieved by the eructation of gastric flatus, and that the treatment of cardiac patients is often dietetic with the object of reducing weight and flatulence. On the other hand, cardiovascular disorders are said to be commoner in males, and gall-stones and cholecystitis in females. But women suffer considerably from cardiac defects and symptoms. Their cardiac pain is called "pseudo-angina," and "wind round the heart" if it is not severe. But women also suffer from cardiovascular degeneration, and they suffer to a greater degree than men from cardiac adiposity. It would appear then that disorders of the two organs may be present in the same individual, and that the symptoms can be confused.

MORBID ANATOMY.

Through the kindness of Prof. H. M. Turnbull I have had the opportunity of examining the mortem records of the London Hospital for ten y In all 350 cases of non-malignant disease of the bladder—i.e., cholecystitis and/or gall-stones—discovered, 202 females and 148 males.

The details of the condition of the arteries myocardium were noted and compared with t of patients of the same age-groups whose bladders were normal (Table I.). A comparison possible, as the descriptive terms employed by W. W. Woods and Dr. A. B. Bratton are stri used. Only certain words are employed, sli moderate, considerable, severe, and very sev Though two cases described in the same terms not have been exactly identical, the variation so slight that it could be disregarded. Over a thous cases were taken for comparison, and as nearly possible three were taken to compare with each g bladder subject in the different age-groups. But

TABLE I.—*Comparison of Degrees of Atherom Marking.*

Age.	Males.				Females.			
	G.-B. cases.		Non-G.-B. cases.		G.-B. cases.		Non-G. case	
	No.	Av.	No.	Av.	No.	Av.	No.	
21–30	None		None		4	2·00	26	2
31–40	7	4·57	48	2·87	3	2·66	48	2
41–50	14	4·28	133	4·37	38	4·36	108	3
51–60	55	6·14	176	4·65	69	5·79	214	4
61–70	47	7·70	133	4·99	60	6·50	110	5
71 and over.	25	7·68	60	7·70	28	7·85	31	7
Total	148		550		202		537	

G.-B. = gall-bladder.

The method of marking was to give 2 marks for "slight."
" " " 4 " " "moderate
" " " 6 " " "considera
" " " 8 " " "severe."
" " " 10 " " "very seve

The above table is shown for interest. It is not meant to statistical value.

system of recording morbid processes is capable of exact measurement, and no claim is made here that it is. On the other hand, care has been taken to put a correct value on terms that have been as far as possible used with uniform exactness. The first comparison was made of those cases in which the degree of atheroma was described as "severe" or "very severe" (Table II.). It will be seen that in both males and females the differences in the two groups for the age of 71 years and upwards are not significant, there being little difference. Below this age there are differences to be noted. Among males between the ages of 41 and 70 there are many more cases of severe atheroma among the gall-bladder cases than among non-gall-bladder cases. Among females the difference is not so great, but still a definite majority.

TABLE II.—*Severe and Very Severe Atheroma.*

Age.	G.-B. cases.	Non-G.-B. cases.
	MALES.	
21–40	No cases.	No cases.
41–50	3 out of 14 = 21·4 %	7 out of 133 = 5·2 %
51–60	22 out of 54 = 40·7 %	14 out of 176 = 8·0 %
61–70	29 out of 49 = 59·1 %	24 out of 142 = 16·9 %
71 and over ..	13 out of 19 = 68·4 %	30 out of 53 = 56·1 %
	FEMALES.	
21–40	No cases.	No cases.
41–50	3 out of 38 = 7·8 %	3 out of 108 = 2·7 %
51–60	14 out of 69 = 20·2 %	17 out of 214 = 7·9 %
61–70	25 out of 60 = 41·6 %	28 out of 110 = 25·5 %
71 and over ..	18 out of 28 = 64·2 %	17 out of 23 = 73·9 %

The figures were submitted to Prof. Major Greenwood, F.R.S., who very kindly examined them and reported as follows:—

> "We have gone into the statistics of these data, taking the two tables where the classification is 'severe' and 'very severe' as our basis, and have asked ourselves whether the differences are statistically significant. In plain English, are the odds against the excess percentage of atheroma in the gall-bladder group being a mere freak of chance so great that it is unreasonable to think that chance is the explanation? With regard to the age-groups 51–60 and 61–70, the answer is that for both males and females the difference is far greater than any which can reasonably be attributed to play of chance. In the age-group 41–60 for females, the difference is not so large that a chance variation can be ruled out; in the age-group 41–50 for males, however, the difference is too great to be reasonably explained by chance. In the age-group 71 and onwards, the differences both for males and females are not significant. When the two distributions are considered as wholes, neither of them is consistent with a mere chance difference. It seems to me, therefore, clear that it is established on this sample that the frequency of severe atheroma as defined is greater in the gall-bladder cases."

Other comparisons were made. An attempt was made to give a numerical value to the different degrees of atheroma. It is not claimed that such a method is satisfactory, nor is it strictly applicable to morbid processes. At the same time it is interesting to note that in the gall-bladder cases the degree of atheroma is greater than in the others. Also that in the age-group 71 and upwards in both males and females the figures tend to approximate, and that the difference at other ages is greater in males than in females. Coronary thrombosis was apparently commoner in the gall-bladder cases, especially in males between 51 and 70. Thus in 102 male gall-bladder cases between 51 and 70 there were eight cases of recent cardiac infarction, whereas in the non-gall-bladder group there were three cases out of 133. Also in these 102 gall-bladder cases areas of myocardial fibrosis were noted in 13. These figures are interesting, though they are obviously of no statistical value. Among females the total figures for coronary thrombosis are still smaller, but even so the gall-bladder cases have a majority.

Without claiming too much, it can be accepted that among patients who have diseases of the gall-bladder of a non-malignant nature, the frequency of severe arterial degeneration is greater than in those who are free from gall-bladder disease, and that the degree of arterial degeneration can be expected to be higher among gall-bladder cases.

COMMENT.

An attempt has been made to discover any factor which might have a bearing on the relation of the gall-bladder to cardiac pain. Clinically, symptoms attributed to disorders of both organs are not uncommonly found in the same patient; also several patients of my own and other observers have been relieved from cardiac pain after operation on the gall-bladder. Is it possible for a diseased gall-bladder to produce symptoms that would be agreed to be cardiac? This question cannot be answered dogmatically, but it is possible that disease of the gall-bladder can produce the same shock and symptoms similar in type, localisation, and severity as disease of the heart. But if cardiovascular degeneration in gall-bladder disease is in advance of its years, it is possible for the heart to add its particular symptoms to those that afflict the patient. It may be that the presence of a diseased gall-bladder is in itself sufficient to cause a middle-aged heart to produce unpleasant cardiac symptoms. Cases occur in which the symptoms are cardiac, and later a gall-bladder attack supervenes which calls for operation. After the operation the cardiac symptoms disappear. We cannot be certain, we can only speculate about such cases. But it can be said that if in a patient with cardiac pain there is any justification for condemning the gall-bladder, surgical treatment should be advised. Many patients are refused operation on account of the cardiac symptoms. I believe this attitude is wrong. The operation is a severe one, but in my limited experience the results have been good, and in some cases remarkable. In America Leech found that the risk of a gall-bladder operation was no greater than for other operations in patients of the same age. Roberts also is definite in his statement that "such patients should not be deprived of the benefit of surgery." In my own experience I have seen no reason to regard the risk as being great enough to forbid operation.

SUMMARY.

1. Clinically there may be considerable resemblance between the severe pain of the gall-bladder and cardiac pain, and there may be overlapping of symptoms in severe attacks affecting either organ. 2. Both types of pain can occur in the same subject and be recognisable as distinct. 3. Disorders of both organs may be present in the same patient. 4. Cases have been quoted in which surgical treatment of the gall-bladder has been followed by relief from both types of pain. 5. If there is any reason to suspect the gall-bladder in any patient who has cardiac pain a full investigation of the gall-bladder should be made, and if sufficient evidence is found, operation should be advised. 6. A study of morbid anatomy reveals the fact that in subjects with diseased gall-bladder the degree of arterial degeneration was higher and the cases of severe arterial degeneration were more numerous than in those whose gall-bladders were healthy. 7. That being so, it would appear to be rational to deal thoroughly with cases of cholecystitis or gall-stones as soon as diagnosed.

I desire to express my gratitude for allowing me to use their clinical notes to those physicians and surgeons whom

I have already mentioned. For allowing me to examine the records of the London Hospital Pathological Institute I am deeply indebted to Prof. H. M. Turnbull and to Dr. A. B. Bratton, and Dr. W. W. Woods for their help in the investigation. I wish to express my thanks also to Prof. Major Greenwood for his kindness in examining the figures *and in giving the opinion which I have quoted.*

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INTRAVASCULAR OCCLUSION OF THE MESENTERIC VESSELS.

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INTRAVASCULAR occlusion of the mesenteric vessels is a catastrophe which is attended by an extremely high mortality-rate but is apparently not so rare as was formerly supposed, and should always be kept in mind in an acute case showing signs of intestinal obstruction. Five cases have occurred at the Queen's Hospital, Birmingham, during the last seven years, and I was permitted by the surgeon in charge to operate upon Cases 4 and 5. This short series illustrates certain points about the symptoms which seem to be adequately explained by consideration of the pathology.

Briefly, mesenteric vascular occlusion may be classified in the following way (Larson [1]): (*a*) arterial; (*b*) venous; (*c*) mixed arterial and venous—this variety is secondary to strangulation and will not be further considered.

(*a*) The *arterial cases* may be due either to an embolus, when the causative factor—a cardiac mural thrombus or valvular vegetation—is present, or to thrombosis of the vessel, when arterio-sclerosis or a generalised arteritis from sepsis is found. In this division may be included a group of cases which are labelled "intermittent mesenteric claudication" by Larson. This is a group which gives rise to much speculation. From time to time surgeons are confronted with puzzling cases where the signs and symptoms of subacute intestinal obstruction are present but on laparotomy nothing obvious is found and recovery takes place. Klein [2] quotes nine cases which he diagnosed as early mesenteric thrombosis and which recovered after expectant treatment, and it is possible that some of the obscure cases with intestinal obstructive symptoms that are met with from time to time are due to spasm of the mesenteric arteries. In this connexion Finney [3] records a case of his own where a girl of 20, known to be suffering from Raynaud's disease, was seen by him with the symptoms of a subacute intestinal obstruction in which he jokingly made a diagnosis of spasm of the *superior mesenteric artery*. At operation a length of blackened gut was discovered at the lower end of the ileum; three feet were resected, and the patient made an uninterrupted recovery.

(*b*) The *venous types* are divided again into ascending, where foci of sepsis are present in the pelvis or lower abdomen—such as a suppurating appendix or an infected ovarian cyst—and descending, where liver conditions, such as cirrhosis or infection, are present. An important division of the ascending cases is those cases of thrombosis of the splenic vein where splenic disease is present.

CLINICAL PICTURE.

From a consideration of the production of intestinal obstruction in the various groups, it seems evident that the mode of onset and the initial symptoms will vary. For instance, a case of embolism from a cardiac vegetation would be expected to show a history of an acute sudden onset and a rapid supervention of gangrene with symptoms of obstruction; whereas the arterio-sclerotic type might reasonably be expected to have preliminary symptoms and to run a less fulminating course. Similarly, in the venous types, a thrombosis starting in the radicles of the portal system, or a gradual occlusion of the ramifications of the portal vein in the liver spreading back to the portal vein itself, would give rise to some preliminary subacute symptoms before the onset of gangrene brought on a condition of complete intestinal obstruction.

A point brought out in the cases quoted below which seems to be of some diagnostic value is the frequency with which the onset of pain is situated in the right iliac fossa. I can find no mention of this in the literature, although it seems to be a reasonable thesis that thrombosis would be most likely to start in the furthest branches of the portal system, which, in the case of the superior mesenteric vessels at any rate, would be in the region of the ileocæcal junction. As regards the inferior mesenteric artery the rarity of the condition in these vessels may be explained by the fact that their most distal branches, the superior hæmorrhoidals, enter into communication with the systemic circulation via the middle and inferior hæmorrhoidal vessels, and also because arterial embolism is less likely to occur in the inferior mesenteric artery owing to the fact that this leaves the aorta at more of an angle and at a lower level than the superior mesenteric artery.

In the series of cases mentioned below there is no instance of occlusion from an embolus, and in no case could the onset of the illness be considered sudden or the course fulminating. The embolic cases are, of course, the most favourable, or rather, least unfavourable for operative cure, for any resection carried out on thrombotic cases is likely to be followed by a spread of the thrombosis along the vascular tree.

The late picture in this condition is the same in all types, being that of an intestinal obstruction; characteristic features are the passage per rectum, of a dark fluid consisting almost entirely of blood, occasionally a blood-stained vomit, a marked fall in temperature, and a raging thirst.

The relative frequency of the various types of mesenteric vascular occlusion differs markedly in the various series of cases published. Larson [1] in his review of 36 cases found the following percentages: arterial 39, venous 44, mixed 17; the average age of his cases was 52·2. Ross [5] found in five cases that the arterial were twice as common as the venous types. In my series a marked preponderance of the venous over the arterial varieties is found, only one (Case 3) being under the latter heading. The average age of my cases is 57, three being females and two males.

CASE RECORDS.

The following is an account of the cases :—

CASE 1.—A female, aged 59, was admitted on June 7th, 1924, with a temperature of 99° and a pulse-rate of 102. There had been a gradual onset of dull aching pain in the right iliac fossa 24 hours previously. This had not been very severe but had gradually become generalised over the whole abdomen. There was a watery vomit soon after admission. Her bowels had been opened slightly on the previous day. An examination revealed a tender mass in the right iliac fossa, and an operation was advised. When the abdomen was opened four feet of blackened ileum were resected and an anastomosis performed. The patient died seven hours later. Post-mortem examination revealed an extension of the gangrene of the gut, which was found to be due to a thrombosis of the portal system spreading distally from the liver, which was very soft, pale, and homogeneous in appearance. No other cause could be found for the thrombosis.

The thrombosis was venous and descending in this case. The symptoms were gradual in onset and began definitely in the right iliac fossa.

CASE 2.—A female, aged 66, was admitted on Jan. 18th, 1925, with a temperature of 98° and a pulse-rate of 86. Seven days before she had complained of a feeling of constriction around the upper abdomen and said she noticed a swelling of the upper left part of her abdomen. She had experienced increasing difficulty in getting her bowels open and had been completely constipated for the previous two days. She was tender all over the abdomen on examination, especially over the lower half. Two enemas were given after admission; both were successful but contained altered blood. A laparotomy was performed the following day. Nothing abnormal was discovered except a blueness of the lower ileum. No resection was performed, the abdomen was closed, and the patient died a day later. At autopsy a thrombosis of the entire portal system was discovered, the blueness of the intestines having extended, and become, in the region of the lower ileum, a definite greenish-black colour. The cause of this was found to be a universal portal thrombosis. Death, however, had been immediately caused by a left pulmonary embolus which had presumably originated in a thrombosis of the femoral vessels which was discovered.

This was a case of venous thrombosis, and is of interest in that the femoral thrombosis and pulmonary embolism point to a diseased state of the vascular system in general, manifesting itself in two different situations. The lengthy duration of symptoms—one week—is a notable feature.

CASE 3.—A male, aged 63, was admitted on Nov. 14th, 1929, with a temperature of 100° and a pulse-rate of 120. The patient complained of pain in the abdomen during the previous fortnight. The pain was dull and aching and was situated in the right iliac fossa. He had also suffered during that time from cramp-like pains in the hands and legs. He had been unable to get his bowels open for the last four days, and on examination was found to be generally distended and tender in the right iliac fossa. No lump could be felt. At operation on the following day, a length of gangrenous small intestine was found and resected, the peritoneal cavity being full of blood-stained fluid. An anastomosis was performed but the patient died the following day. Post-mortem examination revealed a thrombosis of the superior mesenteric artery.

This was a case of occlusion from arterial thrombosis, and the long history and gradual onset of obstruction are strikingly at variance with the picture portrayed by leading text-books. The cramp-like pains in the hands and feet may possibly have been due to an obliterating thrombo-angiitis of his limb vessels, pointing to a general failure of his arterial system.

CASE 4.—A female, aged 48, was admitted on April 27th, 1931. This patient had been seen in the out-patient department a week previously complaining of vague abdominal pain with some tenderness in the right iliac fossa. An X ray examination of the *alimentary tract* was made, but no abnormality was discovered. On admission, the pain in the right iliac fossa had become a little more marked and she had a temperature of 100·2° and a pulse-rate of 100. The tenderness in the right iliac fossa was still present on examination but not so marked, and very little rigidity was found. A suggestion of acute appendicitis was made, and on the directions of the surgeon in charge of the case I operated upon her the same evening. On opening the peritoneal cavity a quantity of thin serous fluid escaped. The cæcum and terminal ileum were a little dilated and a slight blueness of the gut was noted. The intestines were carefully searched for signs of obstruction; I noticed hard masses in the colon, which were taken to be concretions of fæces and barium. In the absence of any other evidence, this was assumed to be the cause of a subacute obstruction leading to the serous effusion and the slight dilatation of the gut that was present. A fibrosed adherent appendix was removed, but did not show any signs of recent inflammation. The abdomen was closed without drainage, but the following day the patient complained of pain in the lower abdomen, where she was tender and, peritonitis being diagnosed, a suprapubic incision was made under local anæsthesia. A quantity of blood-stained fluid escaped. A drainage-tube was inserted, but the woman died a few hours later. At post-mortem examination six feet of gangrenous ileum were found. The radicles of the portal vein draining the appendix and the gangrenous gut were thrombosed, the thrombosis extending up to the hilum of the liver. The spleen was enlarged to twice its normal size and its vein was thrombosed. The mesenteric arteries and the heart itself were normal.

This case comes under the heading of venous occlusion of the ascending type. Tenderness in the right iliac fossa coupled with the rise in temperature and pulse-rate pointed, I thought, to appendical disease. The slightness of the rigidity and the obstructive symptoms present were thought to be explained by the fact that the patient was past middle age, at which time it is recognised that appendicitis may present an atypical picture.[4] The length of the history is again a marked feature.

CASE 5.—A male, aged 49, was admitted on June 4th, 1931, with a temperature of 97·8° and a pulse-rate of 88. This patient walked up to hospital with a note from his doctor, who had diagnosed a subacute appendicitis. He had begun to have pain in his right iliac fossa four days previously, which had now become generalised. He had vomited once or twice during the last two days and had only had his bowels open once—the day following the onset of his pain. His history revealed the fact that he had had a thrombosis of the left leg eight years before. On examination, he was found to be tender all over his abdomen, and some central distension was observed. An operation was performed soon after admission, and large coils of blackened gut presented through a paramedian incision. Four feet of small intestine were resected but the proximal part of the gut almost up to the duodeno-jejunal flexure showed some blueness. A Paul's tube was tied into each end and the intestines drained into a Winchester by the side of the bed. Warmed normal saline was injected at four-hourly intervals into the lower tube, the patient seeming to stand the operation well and to be fairly comfortable the next morning. The following day he rapidly sank, bloody fluid drained from the upper tube, and he died 48 hours after operation. Post-mortem examination revealed an extension of the portal thrombosis right up as far as the portal fissure and a remarkably extensive blackening of the gut. The liver showed advanced multilobular cirrhosis with superadded acute fatty degenerative change and necrosis. The whole of the portal system showed a remarkable condition of diffuse thrombosis causing a gangrenous change in the whole of the small bowel. The splenic vein was also thrombosed and the spleen greatly congested. The heart showed moderate general myocardial sclerosis with coronary atheromatous degeneration. No valvular disease was present.

This must be regarded as a venous case originating in the diseased condition of the liver. Apart from the absence of valvular vegetation or mural thrombosis in the heart, the length of the history and the subacute nature of his illness indicate this, though doubtless his damaged myocardium was an additional factor in its onset. The extensive length of gut affected is explained by a process of thrombosis starting in the liver and spreading peripherally, the most remote parts—i.e., the lower ileum—being most obviously affected.

I thank the surgical staff of the Queen's Hospital for permission to record the above cases, and in particular Mr. Hugh Donovan, who suggested this article and gave me the benefit of his advice.

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AMBLYOPIA:

THE EFFECTS OF KINETIC TREATMENT.

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In the routine examination and treatment of eyestrain patients in my practice, according to the principles laid down in my previous publication,[1] I have been struck of late by the frequent improvement in vision without correction by glasses. I reviewed, therefore, the first 200 records of these cases and the result is that in 51 of them I found an improvement of vision averaging the remarkable figure of 50 per cent.

Amblyopia has been defined as follows:

> "Amblyopia (*ἀμβλύς*, blunt) and Amaurosis (*ἀμαυρός*, dark) are terms used for partial and complete loss of sight respectively in one or both eyes. They are not used of all cases of partial or complete blindness, but have become restricted to certain forms of more or less indefinite character devoid of ophthalmoscopic or other marked objective signs."[2]

The partial loss of sight in otherwise healthy eyes—i.e., the amblyopia of the above definition—is common, far more common than may have been realised by the profesion, if, as should be done, one includes all those cases which show partial loss of sight unwarranted by the amount of refractive error present. These amblyopias, upon coming to diagnoses, are concealed—some may call it "cured"—by the correction of the refractive error found, but the actual condition, nevertheless, persists, and the moment the correcting glasses are removed the amblyopia becomes manifest. And, moreover, even with full correction of the error, one or both eyes may show a definitely diminished visual ability compared with what they ought to have if the amblyopia were removed by more suitable treatment.

Cantonnet and Filliozat, in their recent outstanding work on strabismus,[3] have shown why in very many cases it is an advantage for binocular vision that one eye should see detail less distinctly than the other, and they call this "neutralization." In order to forestall any possible confusion it should be pointed out, however, that the subject of this paper is not neutralization but amblyopia. Amblyopia connotes a partial loss—not suppression—of sight, which manifests itself whether the other eye be looking or not. A few instances may make this clear:

CASE 1.—A, aged 18, had a vision 11/20 in the right eye, and 5·5/20 in the left; the refraction was emmetropia in the right and ½ dioptre of myopia in the left. As there was eyestrain and weakness of involuntary convergence (astheno-vergence), this patient received 17 daily sittings of kinetic treatment. The result was a cure of the astheno-vergence and consequent disappearance of eyestrain, but, incidentally, the vision, without glasses, of the right eye had increased from 11/20 to 25/20 and that of the left eye from 5·5/20 to 11/20. With correction of the ½ dioptre myopia the vision of the left eye was 25/20.

Here, evidently, was amblyopia—i.e., "partial loss of sight devoid of ophthalmoscopic or other marked objective signs"—not warranted by the condition of the refraction. Until the diagnosis of astheno-vergence and the subsequent result of kinetic treatment had made the position clear, the amblyopia had been compensated by a correction with weak negative glasses (−0·75 sph.) which had "cured" the loss of sight, giving a vision of 18/20 with each eye and of 25/20 with both together. From a visual point of view, provided the spectacles prescribed were worn, the prescribing doctor and the patient could have been content, but the patient objected to the wearing of glasses. As can be seen above, no glasses are now necessary.

CASE 2.—B, aged 21. Vision right eye 5·5/20 with −2 sph. −0·25 cyl. 25/20. Vision left eye 1·5/20 with −1·5 sph. −0·75 cyl. 25/20. Eyestrain was complained of and was cured by 21 daily sittings of kinetic treatment for astheno-vergence. The vision of the left eye improved from 1·5/20 to 5·5/20.

The vision of the right eye was justifiable by its condition of refraction, consequently this was not amblyopia, but the vision of the left eye (1·5/20) was not warranted by its refraction. As this patient also objected to the wearing of glasses, the enormous benefit to her of the increased visual acuity is evident.

CASE 3.—C, aged 28, refraction hypermetropic 0·75 in either eye. Vision of right eye 17/20, left eye 22/20. After 26 daily sittings of kinetic treatment for astheno-vergence the visions were 25/20 in each eye, without glasses.

These three cases may suffice to illustrate the point under consideration. They are, I think, evidence that we have to do with "amblyopia." This evidence is, moreover, accentuated by the experience that the defect is readily cured by kinetic treatment for astheno-vergence, showing that this loss of sight is not inherent in the condition of refraction but is caused by astheno-vergence, and is curable, therefore, without and apart from correction of refraction.

The importance of the observation that weakness of involuntary convergence (astheno-vergence) is causative of some serious defect of vision may be gathered from the fact that this kind of defect, this amblyopia, is of very frequent occurrence. As already stated, I have found it in 51 of the first 200 cases treated by me on the indications of eyestrain caused by astheno-vergence. The frequency seems to indicate that a considerable percentage of civilised humanity is suffering from amblyopia in one or in both eyes, a defect which can be radically cured by appropriate treatment of its cause, in contradistinction to the spurious cure by correcting lenses. That this partial loss of sight can be, and in many cases is, overcome by the wearing of suitable spectacles is certainly a consolation and diminishes the seriousness of the condition. Nevertheless, the condition remains.

I give here, in Tables I. and II., the figures of the 51 cases referred to—viz., 38, where at the beginning and at the end of the treatment both eyes had been tested separately as to vision without glasses, and 13 other cases where only at the end of the treatment the vision of both eyes together had been tested without glasses. The omission to test the vision of each eye separately was caused by the fact that at the time I was not aware of the importance of the repetition of these separate tests after the kinetic treatment. I was wrong in thinking that only binocular sight had greatly improved by the treatment.

The figures mentioned signify so many one-twentieths of reading of Snellen's letters at distance, according to the universally used standard.

When the averages are taken, it will be seen that the right eye's vision has improved by the kinetic treatment from 15/20 to 22/20, the left eye's vision from 14/20 to 21/20, while in the 13 cases where the improved sight for the two eyes together only was recorded, the averages are 10·5/20 before and 15·5/20 after the treatment. As will be seen, the improvement in a high percentage of cases progressed from what is considered as normal vision, 20/20, to the better vision, of 22, 24, 25, 33, and in one case even to 40/20. This, I think, is an important observation, showing that many people with potentially supernormal sight suffer eyestrain (astheno-vergence) so that they only have "normal" sight. In the series of cases recorded above, 17 out of 51—i.e., one-third—are in this group. Another group of 12 had only slightly subnormal vision (17/20); six of them improved to supernormal vision. Instructive also are the figures of those who having only 11, 8, 5·5, and still lower visions, in some cases, improved to "normal" and, in one case, to supernormal (25/20) vision.

TABLE I.—*Vision of Each Eye Separately Before and After Treatment for Astheno-vergence.*

The figures for the left eyes are ranged directly opposite their corresponding right eye.

RIGHT EYE.		LEFT EYE.		RIGHT EYE.		LEFT EYE.	
Before.	After.	Before.	After.	Before.	After.	Before.	After.
1 5	5·5	2	5·5	17	20	17	20
3	4	5·5	11	17	25	17	25
4	17	4	17	17	20	17	22
4	4	1·5	3	18	20	18	20
5·5	20	5·5	20	20	30	20	30
5·5	5·5	1·5	5 5	20	30	20	30
8	17	8	17	20	30	20	30
8	11	8	11	20	30	20	30
8	20	5·5	17	20	40	20	40
8	11	8	11	20	24	20	24
11	20	22	22	20	24	20	24
11	25	5·5	11	20	25	3	5·5
17	25	22	25	20	25	20	25
17	25	17	25	20	25	20	25
17	25	17	25	20	33	20	33
17	25	17	25	20	33	20	30
17	20	20	20	20	33	20	33
17	20	11	20	20	25	20	20
17	20	17	20	22	22	17	22

TABLE II.—*Vision of Both Eyes Together Before and After Treatment for Astheno-vergence.*

Before.	After.	Before.	After.
0 5	4	11	20
1	3	17	20
1·5	5·5	17	22
5 5	11	20	24
5·5	11	20	24
8	11	20	25
11	20		

The frequency of this form of amblyopia (25 per cent. of my eyestrain cases), its high amount (averaging 50 per cent. of the actual vision), and its curability (100 per cent.) by kinetic treatment, appear to deserve attention as important indications for the routine application of this form of treatment. The medical profession, by the invention and accurate prescribing of glasses for the correction of vision, has enormously enhanced the visual efficiency and comfort of mankind but I think the time has come to take a further step. This step is to diagnose one of the main causes of partial loss of sight, and to cure the defect permanently by kinetic treatment, without in any way neglecting the correction of refraction, whenever this is indicated after the convergence has been educated to function normally.

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TUMOURS OF THE SKIN

PRODUCED BY BLAST-FURNACE TAR.

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IN a previous paper I. Berenblum[1] demonstrated conclusively the carcinogenic property of a sample of Scottish blast-furnace tar. In a series of 150 mice, following the application of the tar to the skin of the back between the shoulder-blades, he was able to produce 26 tumours, of which three became malignant. Up to this time it had been assumed that blast-furnace tar was non-carcinogenic, as a result of the work of A. Leitch,[2] and owing to the fact that no cases of skin cancer in man arising from contact with blast-furnace tar had ever been reported. In the present communication the results of repeating Berenblum's work with four more samples of blast-furnace tar are described. Three of these tars were obtained from Scottish ironworks using splint coal, and one from an English firm using coal from a local seam.

Source of the Tars.—The charge in an iron blast-furnace consists normally of a mixture of iron ore, limestone and coke, the latter having been previously prepared from coal in coke ovens. There are, however, limited supplies of coal which is non-caking and sufficiently hard to be used directly in the charge of the furnace, usually with the addition of 5 to 25 per cent. of coke. This type of coal, known as splint coal, is almost confined to an area in Scotland. Owing to the presence of volatile matter in the coal, a quantity of tar is carried out of the furnace by the blast-furnace gas, from which it is afterwards recovered. In the blast furnace the charge is fed in periodically at the top, where the temperature is relatively low, and the coal or coke becomes slowly heated up in its gradual descent through a rising current of hot blast-furnace gas. These conditions are ideal for carrying out a "low temperature" distillation of the raw splint coal. In addition, the high oxygen content of the coal results in the production of a tar rich in oxygenated compounds, and gives to blast-furnace tar its highly phenolic character. It is also noteworthy that the total yield of tar is small, and that a considerable quantity of water is usually present.

This process is distinct from the "high temperature" distillation of ordinary gas retorts, in which the fuel is placed in a container, and is heated to bright redness from without. In the subsequent distillation of tar and gas the contact with red hot surfaces markedly alters the character of the tar constituents. Gas tar has long been known as an active carcinogenic agent.

Of the three Scottish tars used in these experiments, the actual amount of coke added to the splint coal in the charge in the case of No. 1 was 15 to 17 per cent.; in the case of No. 2 it was 25 per cent. This latter tar was dehydrated before it was delivered to the laboratory. Scottish tar No. 3 contained a large quantity of water, the excess being decanted off before use. In this case 10 per cent. of coke was added to the burden of the furnace. The furnace from which the English tar was made was charged with 75 per cent. of coal from a local seam and 25 per cent. of coke.

EXPERIMENTAL PROCEDURE.

Sixty mice were used for testing each sample of tar. The hair was clipped away with curved scissors from a small area of skin in the region between the shoulder-blades, and the tar was applied bi-weekly for the first 14 weeks, and thereafter once weekly. This change in the frequency of the tar applications was necessitated by the rather marked tendency to ulceration of the skin exhibited by many of the mice. The experiment was continued for 56 weeks, by which time all the mice had died.

In the Table are recorded the results obtained with three samples of Scottish blast-furnace tar and one sample of English tar. An ether extract of the latter, prepared in the following manner, was also employed. The tar was treated with lime, and then extracted with ether in a Soxhlet apparatus. The ether was evaporated, and the residue was used for application to the skin. Previous experience in this laboratory had demonstrated that the carcinogenic power of a gas tar could be considerably increased by this method.

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[1] THE LANCET, 1930, ii., 1344.

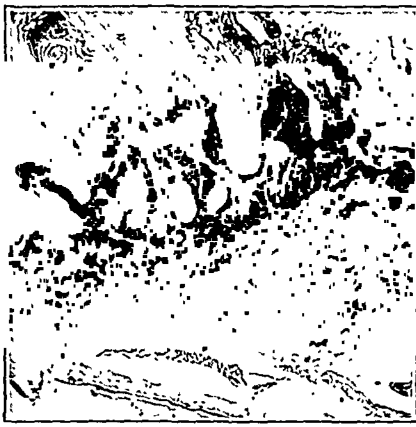
[2] Brit. Med. Jour., 1923, ii., 1

In the case of the three Scottish samples, the first warts appeared at the sixteenth week, and totals of 7, 10, and 8 animals bearing tumours were finally obtained respectively. Of these, the tumours became malignant in three animals. For comparison, the figures of Berenblum are also quoted. He obtained 26 tumours in a total of 150 mice, two-thirds of which received bi-weekly applications of the tar for the whole period of 38 weeks, and one-third of which received weekly applications for 32 weeks only. Three of his tumours became malignant. These results are remarkably similar to those obtained in the present experiment, even allowing for the differences in experimental technique. In the case of the crude English tar, the first wart appeared at the twenty-first week, in comparison with the twelfth week when an ether extract was used. Eight and 24 animals finally bore tumours respectively. Of these, none exhibited malignant changes after the application of the crude tar, but nine became malignant when the ether extract was used. Rather more than 50 per cent. of the surviving 25 animals bore tumours at the thirtieth week. Using a potent gas tar it is usual to obtain the 50 per cent. level between the eighteenth and twenty-first week of the experiment.

Tar sample.	Mice used.	First appearance of wart.	Total with warts.	Warts confirmed histologically.	Malignant warts.
		weeks.			
Scottish I...	60	16	7	4	0
„ II...	60	16	10	4	2
„ III...	60	16	8	4	1
English ..	60	21	8	3	0
Ether extract of English	60*	12	24	16	9

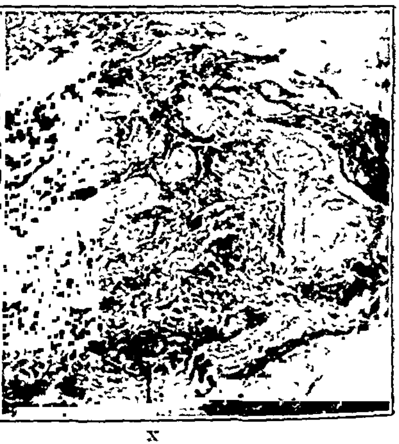
* At 30 weeks there were 25 survivors and just over 50 per cent. of these bore tumours.

FIG. 1.



(Mouse No. 9. Scottish II.) Simple papilloma of the skin of the back produced after 35 weeks' application of Scottish blast-furnace tar. (× 25.)

FIG. 2.



(Mouse No. 6. Scottish III.) Squamous carcinoma of the skin of the back after 54 weeks' application of Scottish blast-furnace tar. X indicates position of invasion of muscle by tumour. (× 80.)

Fig. 1 illustrates a typical early wart produced by blast-furnace tar. Keratinisation of the more superficial part of the tumour is usually well marked as in this case.

The malignant tumours show the structure of squamous carcinomata invading the muscular layer of the skin, and are usually surrounded by a well-marked acute and chronic inflammatory reaction (Fig. 2). One malignant tumour, obtained after 47 weeks of application of ether extract of English tar, consists of a mass of mononuclear round cells invading the adjacent muscle and fat, often seen in mitosis, and metastasising to local lymph glands.

CONCLUSIONS.

From these results it is possible to conclude that blast-furnace tar obtained from a variety of sources is able to produce malignant tumours in mice. It is less active than the gas tar employed in this laboratory, but its carcinogenic properties can be enhanced by extraction with ether. Berenblum pointed out that his sample of blast-furnace tar contained a large quantity of water. Of the samples used for these experiments, Scottish No. II. was dehydrated before receipt, and produced two malignant tumours in 60 mice. Scottish tar No. III. also produced a malignant tumour. This tar contained an excess of water, which was decanted off before use. So that Berenblum's contention that the water content of the tar has no relation to its carcinogenic properties receives strong support. If applied too frequently blast-furnace tar produces ulceration of the skin, but its toxic effects are not well-marked, as was demonstrated by the fact that some of the animals survived weekly applications of the tar for 56 weeks.

With regard to the industrial aspect and the possibility of skin cancer in man arising from contact with blast-furnace tar, it appears that the workers in the ironworks do not handle the tar in the same way as the workers employed by producers of gas tar, pitch, and paraffin. In the first place the yield of tar, as stated above, is small. Secondly, blast furnace tar is regarded as a waste product and is disposed of without further handling. These considerations, together with the fact that blast-furnace tar is not a potent carcinogenic agent, are sufficient to explain the absence of epitheliomatous ulceration in blast-furnace tar workers, and it may be postulated that this tar would be carcinogenic for man as well as for mice given the right conditions for its contact with the skin.

BIRMINGHAM CONTRIBUTORY SCHEME.—Last year the membership of the Birmingham Hospital Contributory Scheme increased by 7382 to 411,584, and the amount collected increased by £2381 to £202,387. In four years the scheme has raised £746,000.

CLINICAL AND LABORATORY NOTES

PERIPHERAL NEURITIS AS A COMPLICATION OF ANGIONEUROTIC ŒDEMA.

DESCRIPTION OF A CASE.

BY W. MACKAY, M.D., F.R.F.P.S. GLASG.,
PHYSICIAN TO THE OUT-PATIENT DEPARTMENT, ROYAL INFIRMARY, GLASGOW.

IN a recent paper Dr. I. M. Allen[1] describes a case of "brachial neuritis and amyotrophy" associated with serum-sickness, and reviews 42 reported cases in which disturbance of the nervous system has followed serum treatment. Most of those reported have appeared in France, where it is recognised that the therapeutic injection of serum may produce neuritis. The following is a description of a case of angioneurotic œdema in the course of which peripheral neuritis developed. It seems to belong to the same category as those described by Allen yet, prior to the onset of his illness, no serum had ever been given to the patient. Such cases are extremely rare.

A man, aged 21, a bus conductor, was admitted to Prof. W. K. Hunter's wards at the Royal Infirmary, Glasgow, on Dec. 1st, 1931.

History.—He had always been well until the previous August, when suddenly he had an attack of dyspnœa resembling asthma. The difficulty in breathing was worse at nights but in a day or two it gradually passed off and the patient resumed work although he did not feel in good health. About the beginning of September he began to have transient and recurrent swellings in the eyelids and over the temples and cheeks. A little later, over various parts of the body, hot and itchy "red lumps" came and went and in the middle of October swellings of an urticarial type appeared, disappeared, and reappeared every few days. The nature of the "red lumps" is unknown. A week before admission to hospital he had shooting pains, but no swelling, in his left forearm, and within a few days he was unable to extend the left wrist. The patient denied the possibility that he had lain on his arm or that he had otherwise injured it. The family history and the patient's habits and environment did not seem to bear any relation to his illness.

On admission there was slight puffiness in the region of the eyes. The skin over the neck and trunk was covered with urticarial swellings of a dirty green hue surrounded by a reddish margin. Some were as large as the hand, others much smaller. There was no complaint of pain in the arm, but the patient was unable to extend the left wrist and he had difficulty in abducting the index, ring, and little fingers from the middle finger. He was able, however, to extend the two distal phalanges of the fingers when the proximal phalanges were flexed. He could bend the elbow but the supinator longus did not seem to take any part in the movement. The biceps and triceps jerks were feebly present. It was apparent that the extensors of the wrist and fingers, the supinator longus, and the interossei were the muscles involved. Appreciation of light touch, temperature, and pain was diminished over the area of the hand supplied by the cutaneous branches of the ulnar nerve. No other lesion of the nervous system was detected, and beyond the presence of numerous rhonchi in the lungs no abnormality was found in the other body systems.

Course of illness.—In from seven to ten days the urticarial eruption had almost gone but smaller patches recurred from time to time, the last patch being noted on Dec. 21st. The most prominent feature of the illness was the frequent occurrence of transitory œdematous swellings in the eyelids and lips, and over the temples and cheeks. On one occasion an œdematous swelling was observed in the anterior abdominal wall and on another, swelling of the tongue was associated with dysphagia. Pain and swelling were present in the right wrist-joint on Dec. 16th and 21st.

In the left arm, atrophy of the extensors of the wrist and fingers, the supinator longus, the interossei, and the muscles of the hypothenar eminence gradually developed and the patient became unable to extend the distal phalanges of the little finger. Electrical tests were applied, and it was reported that the hypothenar group of muscles gave no response to faradism, the interossei gave only a weak reaction, while the extensors of the wrist responded fairly strongly. The remaining muscles of the hand and arm reacted normally. All the muscles of the affected limb responded strongly and quickly to galvanic current.

Throughout the stay in hospital the temperature ranged between 98° and 100° F., although on several occasions shortly after admission to hospital it reached 101° F. At first the pulse-rate was about 130 but it settled later to between 90 and 100. There were no attacks of asthma. Three carious teeth were removed, but no other septic focus was discovered. The bleeding time was within normal limits. While urticaria was present the blood platelets numbered 1,118,000. The erythrocytes averaged about 4,400,000, and there was a degree of hæmoglobinæmia (48 per cent. to 60 per cent.). The leucocytes varied between 6200 and 7800. The Wassermann reaction of the blood was negative. The urine all through was free from abnormal constituents. Dr. C. M. Fleming found the proteose in the urine to be slightly increased in amount, but there was no cutaneous reaction to this substance on the application of scratch or intradermal tests.

Three and a half months after admission power was slowly returning to the affected muscles although atrophy was still present. The biceps and triceps jerks were active. There was still a little difficulty in appreciating tactile, thermal, and painful stimuli over the ulnar side of the hand. The recurring œdema did not respond to treatment with calcium lactate, parathyroid, horse serum, blood transfusion, or marmite, but the general health of the patient was improved and, as he was becoming hospitalised, he was discharged.

The characteristic features of this case are: transient and recurring, localised yet "wandering" œdema, urticaria, slight febrile disturbance, and occasional arthritis. They are very similar to those of serum-sickness. This disease is an expression of anaphylaxis and it is characterised mainly by urticarial swelling, œdema of various parts of the body, arthritis, mild pyrexia, and general malaise. In Allen's case and in most of those reviewed by him the signs of a neural lesion were associated with urticaria. The connexion between urticarial œdema and the disturbance of the nervous system in serum-sickness is so close that an ætiological relationship can be inferred. It is not surprising therefore that similar disturbance may arise in the course of angioneurotic œdema or, as it is sometimes called, "giant urticaria." Such a complication is extremely rare, although symptoms of cerebral origin—epileptiform convulsions, hemiplegia, deafness, and recurring attacks of blindness—have been reported (F. Kennedy[2]). No reference is made to them in well-known British, American, or French text-books.

In the case just described, the main features of the illness were established for at least two months before there was any evidence of involvement of the nervous system. A peripheral neuritis then developed, the musculospiral and the ulnar being the nerves affected. Both were implicated below the level of the elbow, and the evidence suggests that each was separately involved. In four of the cases reviewed by Allen, the musculospiral was implicated and in two of these the lesion was distal to the triceps branch. The disturbance in the nervous system in this case of angioneurotic œdema is similar to some of those occurring in serum-sickness. This is to be expected, since angioneurotic œdema, like serum-sickness, is an expression of anaphylaxis, the essential difference being that in serum-sickness the anaphylactin is known while in angioneurotic œdema its source and nature are frequently matters for conjecture. Further, the symptomatology of each is similar. The common anaphylactic origin suggests a common pathogenesis for the lesions occurring in the nervous system in the two conditions. Allen favours the view that in serum-sickness "local and general œdema" explains the paralysis of single nerves. It is easy to suppose that the change which permits the transudation of serum through the capillaries of the skin and mucous membranes will also take place within the internal structures of the body. In the case under discussion, it is possible that a localised œdematous swelling in the connective tissues of the affected nerves brought about a compression paralysis.

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[1] THE LANCET, 1931, ii., 1128.

[2] Arch. Neurol. and Psychiat., 1926, xv., 28.

It must be concluded therefore that this case of angioneurotic œdema with peripheral neuritis belongs to the same category as those of serum-sickness, showing similar disturbances in the nervous system.

I gratefully acknowledge my indebtedness to Prof. Hunter for permission to publish this case.

RETENTION OF URINE IN A CHILD, DUE TO AN APPENDIX ABSCESS.

By H. Lovell Hoffman, M.B. Camb.,

CASUALTY OFFICER, ROYAL NORTHERN HOSPITAL, LONDON.

A BOY, aged 4 years, was admitted to the Royal Northern Hospital on July 8th, 1931. A week before admission he was said to have had an attack of abdominal pain, during which he vomited twice. After this there was difficulty in micturition, the urine being noted to be dark and scanty. The child had passed no urine at all during the 24 hours before admission, and the bowels had not been open for two days.

State on admission.—Pale child, in no distress. Temp. 102°. Pulse-rate 126. Resp. 23. A swelling was found rising out of the pelvis, dull to percussion, and apparently a distended bladder. There was no abnormality in the penis, the child having been circumcised one year previously. Per rectum an indefinite tender swelling was felt on the left side. The heart, lungs, and central nervous system were normal.

On admission the child was catheterised twice, 9 oz. and 3 oz. of urine being obtained in scanty drops. Great difficulty was experienced in passing the catheter, a fine gum-elastic one being used on the second occasion. After catheterisation the abdominal swelling remained. The urine was acid with a trace of albumin and a few epithelial cells. Radiography of the urinary tract revealed no evidence of calculus.

Progress.—The child was catheterised daily from admission, with results similar to those at the first attempt, the daily measure of urine being 10–12 oz. On July 12th he passed 3 oz. of urine naturally. He complained of intermittent pain in the left side and in the left leg. Mucus was noted in the stools.

On July 13th the temperature was 99·8° and the pulse-rate 130. Tongue furred, lips dry, fæcal odour in breath. Leucocyte count 32,000 per c.mm., 61 per cent. polymorphs.

On July 14th intravenous pyelography was performed, 12 c.cm. of abrodil being used. A bilateral hydronephrosis and hydro-ureter were seen. A cystogram showed a normal bladder outline. A cystoscopy was performed by Mr. Kenneth Walker under general anæsthesia, the interior of the bladder being found to be normal. The bladder was emptied and a bimanual examination was carried out. A swelling could be felt, extending up to the umbilicus, which could be pressed down on to a finger in the rectum, and appeared to be cystic in character.

On July 15th the blood-urea was found to be 21 mg. per 100 c.cm. A diagnosis of pelvic suppuration was made, and it was decided to explore the abdomen.

On July 20th an attempt, during the morning, to pass a catheter proved unsuccessful. By 2 P.M. the temperature had risen to 103·5°. (The child had been catheterised daily up to this time.)

First operation.—At 3 P.M. Mr. L. E. Barrington-Ward opened the abdomen through a left subumbilical paramedian incision. The bladder was distended and caused considerable difficulty throughout the operation. The intestines were firmly fixed to the posterior surface of the bladder and the cæcum appeared to be involved in the mass of adhesions. The appendix was not seen. These adhesions were separated with the finger right down to the neck of the bladder, and in this situation a cavity was opened, from which welled up 2 oz. of foul yellow pus arising, apparently, from a low pelvic appendix. The abscess was drained and the abdomen was closed, a catheter being tied into the urethra. The patient stood the operation well; by the next day the catheter had drained 12 oz., and there was not much discharge from the abdominal wound. On July 22nd the catheter was removed, and the child passed urine naturally into the bed.

Further progress.—The wound later discharged fæcal material, but was dry on August 6th, and from this date convalescence was uneventful. The child was at first incontinent of urine, but eventually regained full control of micturition. During the next six months he was seen several times. He had one attack of acute tonsillitis, but was otherwise well. He was readmitted on Dec. 13th for appendicectomy.

Second operation (Dec. 14th, by Mr. Barrington-Ward).—Incision right paramedian. On opening the abdomen, a mass was felt in the right iliac fossa consisting of cæcum and small intestines matted together by adhesions. These were separated, and in so doing a residual abscess was opened, containing 1 drachm of inoffensive pus which was sterile on culture. The appendix was found lying in the abscess cavity and running down into the pelvis. It was found, on separation, to be about 2 in. long and ½ in. in diameter. It was removed by the usual technique and the abscess cavity was drained.

After the operation the child developed broncho-pneumonia, but made a good recovery, and was discharged fit on Jan. 10th, 1932. An intravenous pyelogram taken on Jan. 7th showed normal renal pelves and ureters.

Pelvic suppuration is a rare cause of retention of urine, and the possible mechanisms causing the obstruction may be considered under two heads—mechanical and nervous.

It seems difficult to believe that the collection of pus which was found could, by its increased tension alone, occlude the urethra; the outer walls of the abscess, consisting of intestines and adhesions, would be very much more compressible than the first part of the urethra surrounded by the prostate. There are, however, certain reflexes between the internal sphincter, the bladder musculature, and the surrounding organs. For example, the reflex between the bladder and the rectum is well known. A full rectum will cause difficulty in micturition, while a distended bladder will inhibit defæcation. The reflexes are mentioned by Janet,[1] and some authorities, for example, Li Virghi,[2] believe that the retention in cases of enlarged prostate is due to some similar effect. One can then easily imagine the congestion and induration surrounding the abscess in this case, causing irritation of the nerves and reflex spasm of the sphincter.

I wish to thank Mr. Barrington-Ward and Mr. Kenneth Walker for allowing me to publish this case.

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[1] Quoted by K. Walker in Brit. Med. Jour., 1930, i., 811.
[2] Li Virghi: Jour. d'Urol., December, 1912.

"ROYAL" HOSPITALS AND HOUSE SURGEONS.—The annual meeting of subscribers to the Bolton Infirmary and Di[illegible]sk for authority to prefix the word "[illegible] The grounds for the application appear [illegible] would "add to the importance of the [illegible] it would remove a difficulty that has been experienced in obtaining house surgeons, "the medical profession being firmly convinced that the addition of the word 'Royal' would attract the better class of medical student."

OUT-PATIENTS IN MOTOR-CARS.—At the annual meeting of the Aberdeen Royal Hospital for Sick Children, the Earl of Caithness, the president, complained that the extended medical services of the institution were being taken advantage of by a class of people for whom it was not originally intended. It was not unknown, he said, for patients to arrive in private cars which waited during their treatment and took them away afterwards. Since 1928 in-patients have increased from 1059 to 1744, and out-patients from 3900 to 6478. On the average an out-patient pays five visits.

REVIEWS AND NOTICES OF BOOKS

A System of Bacteriology in Relation to Medicine.

Vol. IX. By Various Authors. Edited by P. FILDES, M.B., B.Ch., O.B.E., and Prof. J. MCINTOSH, M.D. London: H.M. Stationery Office. 1931. Pp. 364. 21*s*.

THIS volume is the last of the "System of Bacteriology in Relation to Medicine" published under the auspices of the Medical Research Council. Entirely different in its scope, it is a worthy successor to its predecessors. It is devoted entirely to technique and no discussion of general principles or of theoretical considerations finds a place in its pages. To be severely practical has been the aim of the editors.

In their prefacing note they abjure any attempt to cover the whole of the vast field of bacteriological technique and they adopt as their guiding principle the criterion of results. "An editor," they write, will "realise that someone he knows is notoriously capable of reproducing by one method the results supposed to require several hundred," and this has been the basis of selection exercised. This method of selection may entail the omission of methods which in many hands have worked well, but hardly in any other way is it possible to blaze a clear and definite trail through such a tangled jungle as that of present-day bacteriological technique. To define such a clear and easily followed path has been the aim of the editors and in it they have succeeded admirably. Besides such general matter as concerns the staining of micro-organisms and the preparation of culture media, full descriptions are given of many methods necessary for the study of the metabolism of bacteria, for the majority of which laborious reference to the periodical literature has up to the present been necessary; thus concise instructions are given for the identification and estimation of bacterial metabolites, for estimation of the pH, of electric charge, and on many other matters. To the investigator in the higher branches of bacteriological research such a collection of technique as this must save untold time and trouble; to the routine laboratory worker faced with the setting up of an unfamiliar technique the book will also be a boon; to such the sections on the care and breeding of laboratory animals will be of service.

The opening sections by a happy inspiration are devoted to a description of two of the most up-to-date laboratories in the British Isles, the Sir William Dunn School of Pathology at Oxford and the Department of Pathology of the University of Cambridge. It is probable that few readers of the book will be called upon to plan university laboratories, but many may be called upon to build up laboratories on a smaller scale and to survey the ideal even though unattainable is a salutary exercise. To those called upon to plan and equip even the smallest laboratory the details of treatment of benches, plumbing, water-supply, and so forth given in respect of the Cambridge department will be of the utmost value.

The absence of some such standard work as this has long been something of a reproach to English bacteriology. Its appearance draws attention to the equal need for some such authoritative compendium covering the whole field of pathological technique, particularly in its application to clinical medicine.

A Course in Practical Biochemistry.

Second edition. By A. T. CAMERON, M.A., D.Sc. Edin., F.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba; and FRANK D. WHITE, A.R.T.C., Ph.D. Edin., F.I.C., Assistant Professor of Biochemistry in the Faculty. London: *J. and A. Churchill.* 1932. Pp. 237. 8*s*. 6*d*.

THE appearance of the second edition two years after the first indicates the popularity of the book. Prof. Cameron has done great service in producing two works which are of the very greatest assistance to the teacher of biochemistry. His text-book has been referred to in these columns, and it is with pleasure that the present new edition is noted.

The course here described is much more elaborate than that given to most English medical undergraduates. Those familiar with Canadian and American medical education will remember that much more time is devoted to practical laboratory work in physiology and biochemistry there than here, the less intensive study of anatomy making this possible. The book is divided into two main sections, Part I. dealing with qualitative, and Part II. with quantitative and clinical procedures. Part I. contains all the details to be found in most English courses of practical biochemistry, such as tests for proteins, fats, carbohydrates, and enzymes. Part II. is by far the more interesting from the point of view of the English teacher. In most medical schools very little quantitative biochemistry is done; for example, the use of the colorimeter for the analysis of blood, the performance of gastric analyses, the estimations of alkali reserve, and of basal metabolic rate are only just beginning to be taught. The subjects are treated very clearly, and any student after passing through a department of biochemistry, working conscientiously through the course described, would be well equipped. The student will find the information here set out of the greatest value right through his medical course, and if he buys this book will not have to supplement it later with works on chemical pathology or clinical chemistry.

Chirurgische Indikationen.

By Prof. Dr. KARL RESCHKE. Oberarzt der Chirurgischen Universitäts Klinik, Greifswald. First (General) Part. Berlin: *F. C. W. Vogel.* Pp. 357. R.M.22.

SOME years ago in France appeared a book on "Surgical Therapeutics" by Leriche and Lecène, which approached the subject from a somewhat original standpoint. They assumed every surgical problem to be essentially an intellectual one. The plan resulting from this mental deliberation requires a special technique for its execution, and operative procedures were excluded from consideration. Prof. Karl Reschke has for Germany written one part of a book to a very similar design. The volume before us is concerned with what is known as general surgery. But it is more than that, for, to avoid overlapping, the consideration of much usually relegated to the special part is dealt with here: a welcome innovation and a satisfactory arrangement. It is true that much of the knowledge offered is set out in general text-books, but where it is unencumbered by pathological descriptions and accounts of operations, far more stress can be laid upon the evidence for and against the various methods of therapy, and far more space devoted to these important considerations. If the reader should want to know more exactly on what the judgments here recorded are based, there is an excellent bibliography which will refer him to the original sources.

The whole book is well conceived and very well executed. It is interesting to read and contains readily accessible information, to obtain which otherwise would often require an arduous search of the literature. As examples we can ascertain the prospect of gangrene after ligation of any of the main arteries, the probable results of tendon suture, and the indications for and disadvantages of avertin narcosis, while there are excellent summaries of the position of spinal anæsthesia, the different methods of administration of tetanus antitoxin, the value of X rays in lymphatic gland tuberculosis. In his preface Prof. Reschke, while voicing the hope that his book may be of use to students and junior practitioners, modestly observes that the experienced surgeon will gain *nothing new from it but will only be confirmed in his* agreement with or dissent from its expressed views. But there seems little doubt that many experienced surgeons will read the book with considerable interest, and scarcely with no profit at all.

The feeling amongst some physicians that the surgeon is too much obsessed with his technique is belied by such works as this. Indeed amongst modern surgeons there is rather the danger of underestimating the extreme importance of operative skill. The substance of this book is the purely mental processes of surgery, hence there is no need for illustrations, and there are none.

Text-book of Histology.

By EUGENE C. PIETTE, M.D., Pathologist and *Director of the Laboratory of the West Suburban* Hospital, Oak Park, Illinois. Philadelphia: F. A. Davis Company. 1931. Pp. 466. $4.50.

IN recent years there has been a revival of interest in histology, especially in the United States. Dr. Piette's contribution to the rapidly growing collection of text-books is a reliable work in so far as the reading matter is concerned. It presents concise and not too detailed descriptions of structure, accompanied by short notes on function. Heavy type has been liberally interspersed to facilitate revision work. The matter presented is complete and up to date; research work on histology is adequately reviewed and recent advances in the subject are clearly summarised. The names of many authors are cited, and these are gathered together in an "authors index" at the end of the book; but this list will give little help to the student, since no bibliographical references to their works are supplied. The feature of the book which calls for adverse criticism is the illustrations. These are nearly all borrowed from other works. Some of them are bad and many are inappropriate to the text. For example, on page 208 occur the following lines on the thyroid follicles: "They are lined with one layer of cuboidal (seldom flat or columnar) epithelium; the cells are united by terminal bars (Fig. 136)." The illustration of the thyroid gland referred to (which, incidentally, we would not accept as a true representation of the normal thyroid) is of too low magnification (× 80), to demonstrate individual cell structure, and terminal bars are not mentioned in the legend to the picture. Another unfortunate feature is that, when references are made to figures placed at distant parts of the boo the number of the figure is given but not always th number of the page. This would be inconvenien even if all the numbers had been carefully confirmed but this has not been done. For example, referenc is made on page 311 to Fig. 206, which ought t represent a "corpusculum renis" but which i fact represents a ureter of an executed convic There are other errors; for example, the XII. in th last line of page 201 should read X. The style i strongly American and words like "cellulipetal, "increts," and "excrets" are freely used. In spit of these inconveniences the book makes pleasan reading.

The Psychology of Children.

1. *Psychology and Psychiatry in Pediatrics.* Ne York City: The Century Company; London D. Appleton and Co. 1932. Pp. 146. 7*s.* 6*d.*

2. *The Robinsons.* By THOMAS E. LAWSO L.R.C.P., L.R.C.S. Edin. London: The C. W *Daniel Co. 1932. Pp. 44. 1s.*

1. THIS is the report of a subcommittee of th White House Conference, and it is not made clea to the reader how the discussion came about, of wha personnel the various committees and subcommittee were composed, what were their terms of referenc or to whom the report is addressed. This make the task of the reviewer difficult because to allud to omissions might mean that the reproach referre to matters which were never intended to come u for discussion. We may draw attention with approv however to the series of conclusions to be found o page 42. Whoever came to these conclusions, an with whatever purpose in view, there can be no doub of their soundness. Adequate care of children cann be given without intelligent attention to the intellectual and emotional difficulties. The vie *that the doctor without being an expert can acqui* "psychiatric intelligence" is supported by insisten upon his exhibition of "patience, curiosity, toleranc and almost invincible optimism." The su committee believe that if doctors in large numbe acquire "psychiatric intelligence," and becom sensitive to the educational implications of the situ tions which arise in their practice, expert psychologis would be more often called to advise in difficult case to the great advantage of home and school training.

2. Character studies of a family epitomise th influence of environment on the growing child durin the first few years of his life, thus indicating th responsibility which rests on all whose duties brin them into close contact with children. The pamphl is the story of five ordinary people told fluently an humorously, and as Sir Arbuthnot Lane says in prefatory note, the result is five tragedies. T author has limited himself, or nearly, to depicting th influence of one factor in the child's environment-namely, that of place in the family—and he show cleverly how the personalities of the parents inte act to the benefit or the detriment of their offsprin when favouritism or coldness is manifested. Th Robinson circle consists of a hypochondriac, ineffecti father, a capable conceited mother, an elder so whose moral rectitude is outraged by the behavio of an elder daughter, who might have been describe indelicately in a monosyllable, and a younger so the baby of the family, who develops into a ver disagreeable fellow for reasons well set out. The is much acute observation in this unpretentious litt volume.

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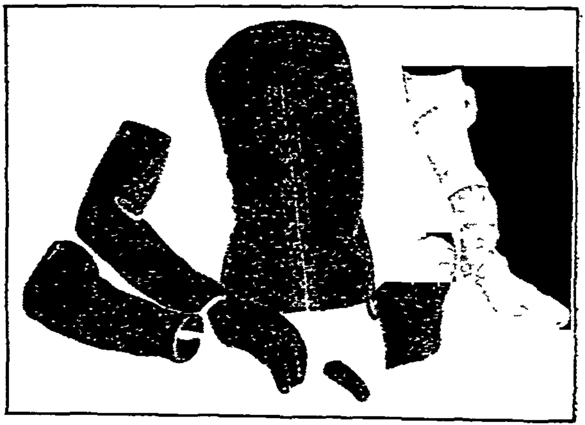

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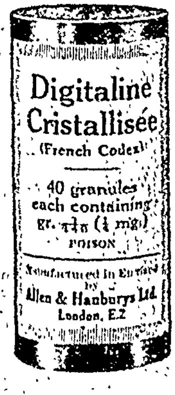
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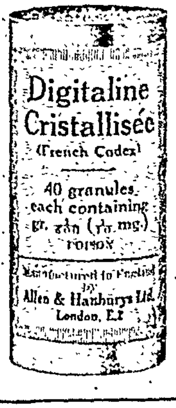
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[*See also pp.* 21, 28, & 29.

THE LANCET.

LONDON: SATURDAY, APRIL 9, 1932.

CHRONIC DUODENAL STASIS.

MUCH has been written, but not so much is known, about chronic duodenal stasis. There are big differences of opinion about it. In most English text-books, for instance, it receives scant mention, and the impression is conveyed that it is rare. In France, on the other hand, they think it important; and in a large new manual of medicine and surgery we find more space devoted to "chronic incomplete stenosis of the duodenum" than to duodenal ulcer itself. According to a recent review by Prof. F. DE BEULE, of Ghent, and others,[1] the condition, though little recognised, is actually common and of corresponding importance and interest. Its existence was suggested by ROKITANSKY as long ago as 1842, and later by GLÉNARD in 1887, but it is only in recent years, with further advances in radiology, that more complete investigations have made it possible to fill in the clinical picture. The duodenum, it may be recalled, is normally fixed by the peritoneal reflection and some three or four "ligaments"; it is crossed by the mesocolon and the root of the mesentery carrying the superior mesenteric artery. Anatomical abnormalities, either congenital or acquired, might thus mechanically compress or obstruct it, and lead to a condition of stasis and dilatation. Of such causes DE BEULE gives numerous examples, as for instance, congenital bands and acquired adhesions around the duodenum following inflammation from cholecystitis, pancreatitis, or even more distant infection such as appendicitis. The latter he suggests acts through a lymphatic spread and is of particular importance. Other causes of duodenal stasis are grouped under the headings of: (1) duodenal ileus, or paralysis due to inflammatory processes such as duodenal ulcer; and (2) stasis following disordered balance of the autonomic nerves (vagus and sympathetic). These groups are rather less definite in their ætiology. H. F. SHATTUCK and H. M. IMBODEN,[2] who report 46 cases in which the diagnosis of chronic intermittent duodenal obstruction was made, considered that bands and adhesions or pressure from the mesenteric pedicle were the two most usual causes. Other workers have found no mechanical obstruction in some 30 per cent. of cases of true megaduodenum, and SCHMIEDEN and KRAAS[3] not long ago reported the operative cure of two cases in which the duodenum was as large as the colon, although there was no apparent obstruction.

Two years ago REGINALD MILLER with H. C. GAGE[4] drew attention to chronic duodenal ileus in children associated with enlargement of the stomach. In describing their own series of cases they mentioned the fact, as noted by other observers, that adults with chronic duodenal ileus might give a history of symptoms during childhood which had ceased for many years during adolescence. In children the main symptoms, as described by MILLER and GAGE, are anorexia and vomiting with malnutrition and lack of growth; there is a comparative absence of pain in the abdomen except immediately before vomiting. In the adult the typical symptoms are described as being cyclical crises of abdominal pain with bilious vomiting and a sensation of weight and distension in the epigastrium; the absorption of toxins from the duodenum gives rise to such general symptoms as headache after meals, and loss of weight and energy. Various groups of symptoms are said to simulate cholelithiasis, appendicitis, and simple duodenal ulcer. Radiographically, by which means the diagnosis has finally to be made, the main features of chronic duodenal stasis are given as: delay in passage of the meal through the duodenum (according to DE BEULE and DE WITTE longer than 15 seconds), dilatation of the duodenum, and the presence of abnormal peristaltic and antiperistaltic waves. Treatment must be mainly directed to the cause. Often it must be surgical, and duodeno-jejunostomy is recommended as giving excellent results in many cases, though other forms of operation have been proposed and practised. In children, as MILLER points out, medical treatment is as a rule desirable, since spontaneous improvement seems to take place at the age of about 5 years. This treatment should aim at lessening the bulk of the diet and the frequency of the feeds—the object being to discourage any associated enlargement of the stomach. Even in adults many clinicians advise a thorough trial of medical measures. Of these, postural treatment is regarded as important and considerable relief is obtained by adopting the knee-chest position or by lying on the chest or on the left side. The diet advised is similar to that generally in use for gastric ulcer. Abdominal massage and the use of a suitable belt are also recommended. If, however, we are to believe that a mechanical obstruction is the most frequent cause, it is hard to see that non-surgical treatment can be an effective cure, especially in view of the reported success of surgery even in non-obstructive cases.

Cases of congenital mechanical obstruction of the duodenum are rare, and actual duodenal stenosis, from whatever cause, is certainly less common than pyloric stenosis. But minor degrees of "ileus" may perhaps be commoner than is generally realised. There is a large group of chronic dyspeptics offering vague symptoms, with discomfort and nausea after meals and a feeling of distension in the epigastrium; and in many of these cases no evidence of gall-bladder or other abdominal disease can be found. In some of them attacks of profuse biliary vomiting occur periodically, closely resembling migraine. Of SHATTUCK and IMBODEN's patients a large number had suffered from "bilious attacks" even since childhood, sometimes with unilateral headaches; and more than half had had their appendices removed without relief. Such a condition is apt to be labelled nervous indigestion or visceroptosis, but the patient may in fact be suffering from mild duodenal stasis. The accompanying symptoms of fatigue, headache, and the like, so often encountered in these cases, could certainly be produced more easily by absorption of toxins from the small intestine than from the large, and a duodenal "constipation" must be a far more serious thing than colon constipation. The question is undoubtedly one of real practical importance and it is to be hoped that further work, especially radiological, may show to what extent duodenal stasis may really be a cause of chronic indigestion. If we are to believe the French authorities we must regard it as one of the commonest causes of otherwise unexplained digestive symptoms. But its true incidence is at present the most doubtful thing about it.

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[1] Bruxelles Méd., Jan. 17th, p. 332.
[2] Jour. Amer. Med. Assoc., March 19th, p. 943.
[3] Med. Klinik, 1931, xxvii., 1445.
[4] Arch. Dis. Childhood, 1930, v., 83.

◆

WATER METABOLISM AND EPILEPSY.

In their comprehensive monograph on epilepsy W. G. Lennox and S. Cobb [1] attribute the following statement to Hippocrates or one of his pupils :—

> "But whoever is acquainted with such a change in men and can render a man *humid or dry*, hot or cold by regimen could also cure this disease (epilepsy), without minding purifications, spells and all other illiberal practices of a like kind."

Their survey of recent metabolic research in this disease has led them to paraphrase this passage as follows :—

> "Whoever is acquainted with physiology and can render a man acidotic, dehydrated and fully oxygenated could also repress this disease, without minding purification of narcisistic personalities, ritualistic empirical diets and all other illiberal practices of a like kind."

Much interest has lately been focused, in America, on the possibility that the convulsions of epilepsy may be the expression of an underlying instability in water balance. It is certainly somewhat striking that several therapeutic measures which have been found to be of greater or less value in controlling convulsions—such as starvation, ketogenic diets, extreme limitation of fluid intake, and administration of acid-forming salts like ammonium chloride—have one effect in common, a depletion of the body fluids. Equally interesting is the work of I. McQuarrie,[2] who has been able to produce fits at will, in epileptic children, by increasing the intake of water and at the same time postponing diuresis by injections of pituitrin. These circumstances have led some writers to the conclusion that the epileptic convulsion is caused by an accumulation of cerebro-spinal fluid in the subarachnoid and perivascular spaces of the cerebral cortex. Temple Fay [3] believes that lesions of the Pacchionian bodies may be responsible, by interference with the egress of cerebro-spinal fluid. G. W. Swift [4] suggests that developmental abnormalities of the great venous sinuses may sometimes cause a similar obstruction, and has devised an operation for mobilising the lateral sinuses, which, he claims, decreases the obstruction, and, in selected cases, often relieves the convulsions. The anatomical vagaries of the veins draining the brain are so erratic, however, that it must be difficult to draw the line which separates the normal from the abnormal. Nor can this conception of epilepsy be satisfactorily reconciled with present knowledge. The subarachnoid spaces are admittedly often dilated in epilepsy, but it is hard to prove that this change is not the result of cerebral atrophy. Moreover, it is evident from elementary hydrodynamic principles that obstruction to the outflow of the cerebro-spinal fluid through the Pacchionian bodies must lead to a uniform rise of pressure throughout the ventricular system. Increased intracranial tension causes a very distinct clinical picture of headache, vomiting, papillœdema, and slowing of the pulse and respiration, and it is significant that the epileptic convulsion is preceded by none of these signs.

It is clear that the evidence does not support the interpretation outlined above. It does not follow, from the fact that *artificially* provoked dehydration may abolish, or water retention precipitate, fits, that the *spontaneous* convulsion is due to water retention. There is, in fact, no direct evidence that such is the case. And in this connexion some important observations, published by J. L. Gamble and B. Hamilton in 1927, which have been widely misinterpreted, deserve comment. These workers found that in epileptic children the excretion of water, sodium and chlorine increased during periods of convulsions and fell during the intervals between attacks—changes which indicated alternate release and retention of extracellular fluid by the tissues. Gamble and Hamilton themselves were intentionally non-committal about the import of these fluctuations, but subsequent writers have assumed that the retention of fluid before the convulsion constitutes the primary change, neglecting the more cautious alternative explanation—namely, that the convulsion itself causes a loss of body fluid, which is in turn succeeded by reactionary retention.

To exactly what extent disturbance of water balance enters into the ætiology of epilepsy must remain, for the present, unsettled. Meanwhile, to quote Lennox and Cobb, "The painstaking accumulation of apparently unrelated facts must go on until, like stones for a mosaic, they are sufficient in number to permit their assembly into a complete and intelligible design."

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CRITICISM OF DIET.[5]

The Advisory Committee on Nutrition, in a recent memorandum to the Ministry of Health on the criticism and improvement of diets, have been admirably concrete in their recommendations. The members of the Committee are: Prof. Major Greenwood (Chairman), Dr. G. F. Buchan, Prof. E. P. Cathcart, Sir Frederick Gowland Hopkins, Miss Jessie Lindsay, Prof. E. Mellanby, and Prof. V. H. Mottram; a veritable array of exact informants. A diet to be satisfactory must fulfil four criteria: it must have an adequate caloric value and must contain a sufficient amount of first-class protein, mineral matter, and vitamins. The proper distribution of calories for a grown man is achieved if he takes 100 grammes of protein, 100 grammes of fat, and 400 grammes of carbohydrate per day. First-class protein, that is, protein with a high biological value, is found in cheese, eggs, fish. meat, and milk, and should be taken by a grown man to the amount of about 37 grammes, or 5 per cent. of the total caloric intake in the day. The Committee find that if a diet contains milk, and dairy produce generally, fish, eggs, vegetables and fresh salad (the "protective foods," protecting the body against deficiency diseases) there is little need to criticise it as regards mineral and vitamin content; and it is old experience that if the caloric, protein, and vitamin contents of the diet are adequate the carbohydrate can be left to take care of itself. Probably the mineral matter and vitamin content of the diet are satisfactory if made up as follows for one day and one person: 1 pint of milk; one orange, tomato, or helping of raw salad; one ounce of butter or vitaminised margarine; and, in addition weekly, especially in winter, some fat fish, such as herring; or, daily, half a teaspoonful of cod-liver oil. Defective diets in this country are usually the result of unscientific economy. Most institutions recognise certain foods which are cheap sources of calories, such as flour, oatmeal, bread, the pulses, dripping, margarine, treacle, sugar, and not far behind, butter, cheese, jam, bacon, and dried fruits. Cheese, herring, fish roe, and sprats are recommended by the Committee as economical sources of first-class protein, and need little cooking. Skimmed milk, if available, also provides first-class protein cheaply, and at the same time is valuable as a protective food. If margarine is to be given instead of butter, a brand should be used which can be shown to contain vitamins A and D. Diets are often found to be deficient in vegetables, both cooked and salad vegetables, particularly during the winter months, and the Committee point out that there is little excuse for this in England, where tomatoes, celery, lettuce, endive, and water-cress are easily and cheaply obtainable during the autumn and winter; a more general use of carrots, oranges, and lemons is also advisable.

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[1] Medicine Monographs, 1928, xiv., 153.

[2] Amer. Jour. Dis. Child., 1929, xxxviii., 451.

[3] Amer. Jour. Psychiat., 1930, ix., 667.

[4] Surg., Gyn., and Obst., March, 1932, p. 566.

[5] Report on Diets in Poor-law Children's Homes. Memorandum on the Criticism and Improvement of Diets. H.M. Stationery Office. *3d.* each.

In a report on diets in poor-law children's homes the Committee were able to show some of the ways in which institutional diets might fall short of their criteria. Much depends on the capabilities of the officers in charge of the homes; in certain of the scattered cottage homes a foster mother may be in almost sole control of about a dozen children, and is often directly responsible for the choice and purchase of food, as well as for cooking it. The cost of feeding these children is surprisingly low; in one case the allowance for food and cleaning materials for 12 boys and a foster-mother was £3 4*s*. a week, but it must be borne in mind that much of the food is bought at contract prices, so that the cash allowance has a greater value than it would if retail prices were paid. The Committee made the interesting observation that the cost of food per head in homes visited in the north of England exceeded that in homes visited in the south, despite the fact that prices in the north were on the whole lower than in London and the home counties. The additional cost was reflected in a better standard of feeding in the northern homes. The quantity of food supplied appeared to be sufficient, and there was reason to suppose that in general the children were better fed than they would have been in the ordinary homes of children of a like class. But the diets were open to criticism, usually under three heads: a desire to keep cooking down to a minimum; a lack of knowledge of food values; and a tendency to monotony. Three meals a day were served, breakfast from 7.30 to 8 A.M., dinner at 12.30 P.M., and tea at 5 to 5.30 P.M. In one home for children under 5 years of age breakfast was given at 7.30 A.M., dinner at 11.30 A.M., and tea at 3.30 P.M. We agree with the Committee in regarding this long interval between tea and the following breakfast as being most undesirable, more especially as their investigations show that both tea and breakfast were likely to consist only of bread, margarine, and cocoa.

Monotony was often the outcome of a fixed schedule of diet arranged to cover a week. The Committee advise that such schedules should be made to cover 8, 15, or 22 days, and provide an example of an eight-day schedule as an appendix. Dinner was the main meal of the day in all the homes and generally consisted of meat and two vegetables followed by a sweet. The usual constitutents of breakfast and tea have already been mentioned, but in some of the northern homes bacon was sometimes given for breakfast and tea was enlivened by tripe or stewed fruit. The Committee advise a redistribution of the food values over the three meals to avoid the concentration of most of the first-class protein, and probably most of the interest, in the mid-day meal. The supply of raw fruit was unsatisfactory, they found, and it seems more often to be regarded as a luxury than as a necessary part of the diet; cheese and cheese dishes are also subject to an unexplained neglect, and little use seems to be made of water-cress, even where abundant supplies are available. The existence of brands of margarine containing added vitamins does not seem to be generally known, and is certainly not sufficiently advertised by the makers. The Committee head their recommendations with the suggestion that a pint of milk daily should be allowed for each child and that special care should be taken to see that the full amount is received by every child under 16. They include a number of economical and nourishing recipes in an appendix which would repay study by all those responsible for institutional cookery on a large scale.

CRIME IN 1930.[1]

THE Criminal Statistics for the year 1930 present a somewhat depressing picture. Crime, it seems, is on the increase in England and Wales, and the ranks of the criminals are being recruited from among the youngest generation. The official commentaries on the Statistics for 1928 and 1929 had prepared us to expect a continuing addiction to lawless and adventurous crime on the part of the "war-juvenile" offenders who were deprived of full parental supervision 15 years ago. We might have guessed perhaps the effect of unrelieved unemployment upon the young, the stimulus of lurid cinematograph films, and the criminal possibilities which the mechanical bent of modern young people can find in the exploitation of the motor-car. Nevertheless, with the birth-rate falling and with the prolongation of life revealed by modern actuarial expectancies, it is startling to discover that two-thirds of all the persons found guilty of crime in 1930 were below 30 years of age, that two-fifths of the gross total were under 21, that only 7 per cent. of that total were over 50, and that even persons of the active ages from 30 to 50 constitute only 1 in 4 of the guilty. There is evidence that, in the face of this increase in crime, the courts in 1930 imposed more sentences and heavier sentences; but the young cannot be sent to prison till the full resources of the probation system and of Borstal Institutions have first been exhausted. Evidently the Probation of Offenders Act has been freely used, for, out of more than 11,000 boys found guilty, 89 per cent. were placed on probation. Offenders of both sexes and of all ages have had the benefit of the Act. The total of persons found guilty in 1930 was 56,767. No less than 28,365 of these (almost exactly half the total) were dealt with under the Probation of Offenders Act; of the remainder who had to receive some form of sentence, 13,762 were sent to prison, 532 to penal servitude, and about 750 to Borstal Institutions.

Official comments indicate that the increase in crime in 1930 lies mostly in offences against property. The position seems worst in the north of England where industrial depression has been severe. Small thefts have risen everywhere; "breakings-in" and kindred offences have risen too; violence against the person (other than sexual assaults) is rising; blackmail cases jumped to 94 from the previous year's figure of 49; and bigamy, after declining in the post-war years, is on the up-grade again. Two years ago the official editor of these Statistics remarked upon the relative constancy of the numbers of murders known to the police; it was then pointed out that, over a period of 60 years, the annual total had not fallen below 100 nor risen above 200. In 1929 there were 103 cases, excluding deaths of persons aged less than one year. In 1930 there were known to the police 75 cases of murder in respect of 86 persons aged one year or ove
Here, *therefore*, we *have* a notable decreas
The murderer or suspect committed suicide i
32 cases (involving 42 victims); in 35 cases 3
persons were arrested; in 8 cases no arrest wa
made. Of the 36 persons arrested 9 were acquitte
or were discharged at the police-court, 4 we
found insane on arraignment, 11 were foun
"guilty but insane," and 12 were convicte
6 of the 12 being hanged. Of the 8 cases in whic
no arrest was made, 3 of the victims had die
following illegal operations; these deaths pr
sumably increased the inevitable difficulty
obtaining evidence against a criminal abortionis
The tables show that 53 persons were charge
with the offence of procuring abortion (15 mal
and 38 females). Twelve were acquitted; t
remaining 41 persons were convicted, with t
result that 10 were sent to penal servitude a
22 to imprisonment, while 9 were released up
recognizances without a probation order. T
total of 53 persons charged compares with tot
of 43 for 1929 and 73 for 1928. The annu
average for the period from 1920 to 1924 w
32. Though the annual totals show a tenden
to rise, medical practitioners can form their o
opinion of the success of the police in bringi
this class of offender to justice. The year 19
shows an all-round decrease in the figures
coroners' inquests and investigations, as compar
with the previous year; no explanation is offe
of this phenomenon which certainly cannot
ascribed to diminished vigilance. In 7673 ca
there was a post-mortem examination with
inquest (a slightly greater number than in 192
the number of inquests with a jury rose in 1
to 12,999 from the 1929 level of 12,353. If
compare the totals of the kinds of verdicts retur
at inquests in these two years, we find a drop
cases of death due to want or exposure (fr
133 to 93), in deaths due to excessive drink
or drug-taking (from 172 to 141), and in dea
from disease aggravated by neglect on the p
of other persons (from 32 to 22). As usual
inquests on males are more than double those
females. There were 63 more suicides in 1
than in 1929; 41 fewer attempts at suicide w
brought to the notice of the police.

Those who study our Criminal Statistics regula
will regret that the chill penury of natio
economy has cut down the valuable introduct
comments which gave the volume great sociologi
interest in recent years. The Home Office, hav
access through its own specialists and thro
the Prison Commissioners to a mass of import
information, should make fully available to
the supplementary facts, explanations, and spec
tions which can enliven the arid and jejune colu
of tabular statistics. Two years ago we w
given 69 pages of official introduction, last y
only 32; this year we have a beggarly 21 pa
Recent events in penal institutions have stir
public attention. The next annual report of
Prison Commission must not be cut down in t
nip-farthing fashion.

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[1] Criminal Statistics, England and Wales, 1930. H.M. Stationery Office. 1932. 3*s.* 6*d.*

ANNOTATIONS

THE FUNCTIONS OF THE TONSILS.

IN spite of much research, little is definitely known about the functions of the tonsils. L. B. Seiferth,[1] of Cologne, has recently reviewed at length modern knowledge of the subject, and a perusal of his essay emphasises the scantiness of this knowledge. He discusses the possible functions of the tonsils under the headings of lymphocyte formation, defensive function, and internal secretion, and he concludes that the only function which has been proved with certainty is the production of lymphocytes. This function the tonsils share with all the lymph glands of the body, and their extirpation cannot therefore, from this point of view, do much to alter the general bodily constitution. In addition there are good grounds for believing that the tonsils play an important part in the defensive mechanism of the body, and Seiferth believes that the involution of the tonsils at puberty may be connected with the fact that by this time a satisfactory degree of immunity has been achieved. Experiments directed to prove an internal secretion have so far been so contradictory as to be quite inconclusive. Seiferth holds that the theoretical problem can have at present but little influence on the practical one of clinical treatment, which may, in his opinion, be summed up in the two words "chronic tonsillitis"; but the diagnosis of this chronic tonsillitis, and therefore the indications for operation, have not so far been greatly influenced by physiological considerations. The practical side of the tonsil problem is dealt with very directly in a letter of instruction sent to school physicians by the Department of School Hygiene of the City of Boston[2] in the hope that such carefully formulated rules should tend to bring the school and family physicians into better accord. According to these rules the school physician should recommend tonsillectomy and adenoidectomy only :—

1. If the child gives a history of repeated attacks of acute tonsillitis or quinsy sore-throat ;
2. If the child has suffered from continuous head colds ;
3. If the cervical glands are definitely enlarged and have suffered from acute inflammation ;
4. If the child has obstructive nasal breathing (adenoids) ;
5. If the child has suffered from an attack of acute catarrhal or suppurative otitis media ;
6. If the child is a mouth breather ;
7. If the child gives a history of repeated attacks of pharyngitis, laryngitis, or bronchitis ;
8. If the tonsils obstruct the fauces, making the swallowing of food difficult ;
9. If the child gives a history of rheumatism, chorea, endocarditis, or nephritis ;
10. If there is evidence of a continuous discharge from the nose not caused by a sinusitis or antrum disease ;
11. If the tonsil is "buried" and therefore objectively not visible as a large structure but shows definite evidence of a diseased condition.

It does not, however, appear to follow that operation must be advised in all children falling into any of these groups. Nos. 4 and 6 seem to be synonymous, and it should be remembered that there are other causes of nasal obstruction in children ; No. 11 appears to beg the question, for removal may be advisable when a tonsil "shows definite evidence of a diseased condition" whether it is or is not buried. On the whole, these rules should achieve the purpose for which they have been framed ; but truly the "tonsil problem" is too difficult to be solved within so rigid a frame.

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[1] Med. Welt, March 19th, p. 401.
[2] New England Jour. of Med., March 17th, p. 592.

GLYCOSURIA AND PREGNANCY.

THE question of the significance of sugar in the urine should at all times be answered as accurately and quickly as possible so that the patient may be saved from unnecessary treatment on the one hand, or from delay in treating true diabetes on the other. In pregnancy this question arises frequently, because glycosuria without diabetes is a common concomitant of gestation. An annotation in our last issue indicated some of the dangers which have to be faced when true diabetes is present, and it is clearly of vital importance to have some ready means of distinguishing the two conditions. In the first place it is well to know how often simple glycosuria occurs in normal pregnancy, and Dr. L. A. Chase[1] has attempted to get this information. She obtained 100 specimens of urine from 18 patients in the latter part of pregnancy, and found sugar in 66 of these, while only two of the patients failed to show sugar on any occasion. Another woman carried out 100 examinations on her own urine, the tests being done four times a day for 25 days. Forty-seven of these specimens showed sugar, most often in the afternoon and rarely in the morning, but the fasting blood-sugar was normal. A further series of patients from private practice showed that glycosuria at some period after the second month is the rule in pregnancy, while in those patients in whom no glycosuria was found at any time it was easily induced by giving extra sugar in the diet. Sugar-tolerance curves were done in three cases, and curves similar to those found in renal glycosuria were found in all of these. After delivery the glycosuria disappeared quickly in all but three patients and sugar-tolerance tests done on these showed a renal leak. These have been examined at yearly intervals since, and have remained well during the last four years. Dr. Chase considers that glycosuria during pregnancy is normal and requires no treatment, and does not predispose to the development of diabetes. V. J. Harding and D. L. Selby,[2] in further discussion of the same subject, agree that its incidence is very high, and that it may be found in 100 per cent. of normal pregnancies if properly looked for. They hold that the factors which determine its presence are the diet of the patient, the volume of urine passed, and the time at which the specimen is passed in relation to the previous meal.

The common appearance of simple glycosuria during normal pregnancy may make the diagnosis of the rare cases of true diabetes very difficult for the practitioner. Clearly he cannot have complicated biochemical tests done on all patients who show a trace of sugar in the urine, but he must rely on some clinical criteria. There is certainly no single test or sign which will enable him to distinguish with certainty the two types, and the solution will depend, as in most other clinical problems, on a thorough survey of the history and findings in each individual case. Harding and Selby regard the following points as of most value in making the distinction. First, an absence of the history and symptoms of diabetes ; thirst, polyuria, and pruritus vulvæ are practically never found in so-called renal diabetes. Secondly, absence of sugar in the fasting urine, unless this is very concentrated ; if sugar is found a second fasting specimen should be examined after the patient has drunk eight ounces of water, and if sugar is again found, then the fasting blood-sugar should be determined, and this should be within the limits of normal if the glycosuria is physiological. Thirdly, an absence of ketonuria. To determine this they suggest a modification of the usual Rothera test, which is so sensitive that a positive finding in pregnancy is not significant. The Le Nobel[3] variation is less sensitive and a positive result is therefore of greater significance. Owing to the difficulty of distinguishing with certainty between glucose and lactose in the urine, Harding and Selby consider that it is safer to assume the presence of glucose when a reducing substance is found. If every case is approached on these broad lines the practitioner will find very few in which a sugar-tolerance test is necessary for diagnosis.

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[1] Canad. Med. Assoc. Jour., March, 1932, p. 279.
[2] Ibid., p. 283.

HIGH BLOOD PRESSURE AND RENAL DISEASE.

THE cause of the rise of blood pressure in chronic nephritis is far from clear. The view most commonly accepted is that the failure of renal function allows certain toxic pressor substances, which should normally be excreted in the urine, to remain in the circulation. The precise nature or origin of these pressor bodies is not understood, though they are thought to be nitrogenous and to be powerful vasoconstrictors. Another theory is that the actual tissue breakdown products of damaged kidneys act either directly upon the heart and blood-vessels, causing vascular spasm, or indirectly by stimulating the output of adrenalin from the suprarenal glands. A third suggestion is that the mechanical hindrance to the flow of blood through the kidneys, resulting from chronic nephritis, leads gradually to a compensatory increase of blood pressure required to maintain the renal circulation. A study of the degree of hypertension in various forms of renal disease throws some light on these mainly theoretical considerations, and M. Rosenberg[4] records some 20 cases that are of particular interest in this connexion. All the patients had died of actual uræmia with nitrogen retention in the blood, and they comprised cases of polycystic kidney, ascending pyelonephritis, hydro- or pyonephrosis, and renal tuberculosis. In other words they were cases in which there was extreme destruction of kidney tissue and a fatal renal insufficiency. In a large proportion of them, however, there was no increase in blood pressure, nor cardiac hypertrophy. Thus more than half of the 12 patients with ascending infection or urinary obstruction and hydronephrosis had a normal blood pressure with no ventricular hypertrophy; and in three fatal cases of polycystic kidney the same observation was made. It is thus again shown that there may be uræmia and complete renal failure without increase in blood pressure. Since the destruction of the kidney tissue may be extreme in these cases one must suppose that mechanical hindrance to the renal blood flow cannot at least be the sole cause of cardiovascular changes. Further, it seems improbable that mere failure of the kidneys to excrete pressor substances is enough to produce the increase in blood pressure. It is of course in chronic glomerulonephritis and arterio-sclerotic nephritis that hypertension is especially marked, and here the renal failure may be less extreme than in polycystic kidney. This suggests that there may be some qualitatively varying product of kidney cell destruction that causes vasoconstriction and high blood pressure, or even that some primary *non-renal* toxic substance causes both the vascular and kidney changes. This last appears to be the probable explanation in a number of cases, and also the pregnancy kidney, to take an example. Rosenberg concludes that since high blood pressure, with cardiac hypertrophy, is much rarer in the cases mentioned than in chronic glomerulonephritis or renal arterio-sclerosis, the increase of blood pressure is probably due to the presence of some chemical substance quantitatively if not qualitatively different in the different lesions.

INHERITANCE OF TEMPER.

WHILE it may be a true saying that no one can be a leader of men unless he can lose his temper, it is at least equally certain that many persons have no ambition to lead anything more exacting than a quiet life, and for this purpose an even temper is an asset. Dr. G. F. Still, writing in the *King's College Hospital Gazette* for February, mentions an investigation made by Francis Galton in 1887 to decide how far the possessor of a bad temper may lay the blame on his inheritance. Galton found that in 43 families in which both parents were good tempered, 30 per cent. of the children were good tempered, 10 per cent. bad tempered, and the remainder neutral, showing no marked tendency in either direction; in 25 families in which both parents were bad-tempered the number of good-tempered children was only 4 per cent., while bad-tempered children amounted to 52 per cent. As Dr. Still points out, the issue here is not simple, because the child living with bad-tempered parents is in an unfavourable environment from the start. He mentions other factors which may be detrimental to temper, such as indigestion and the exhaustion produced by a long illness. The possibility that endocrine imbalance has a bearing on temper cannot be overlooked; irritability is a common accompaniment of puberty and the menopause, and Dr. Still refers to the comfortable temper of the cretin and the myxœdema patient, and to the improvement sometimes observed in the temper of a thin child who begins to fatten.

But he concludes that we start life handicapped or blessed by a lower or higher coefficient of irritability; "we all have our flash point of anger or irritation," he says, "but in some the flash point of irritation is lower than the average." And though he grants that some, with tactful training, may acquire an artificial repression of impulses which makes a negative substitute for good temper, for those to whom ill-temper belongs by heritage and environment he has sympathy but little hope. He takes, perhaps, rather a dark view of the case. While it is true that there is a type of temperament which can be happy in any circumstances, there is another type which can be happy in some circumstances and not in others. Most of us have encountered men who were cheerful while their affairs were in good train but who became irritable and whining in the face of disaster; the cantankerous wife of an unsuccessful husband may be transformed into a delightful person by the removal of financial anxiety. Children, it has often been observed, may behave charmingly at school and yet like a generation of vipers at home. There is, moreover, a possibility that the legend of a "family temper" may become a fetish which has to be satisfied with unwilling victims. This may explain the case of a boy who constantly indulged in violent temper tantrums—"just as your uncle George used to do," he was told. His parents were sympathetic, but he made no attempt to master his rages, as they had a sound hereditary reason. But his temper in manhood was unusually equable, and a friend, father of an irritable son, asked him how he had been stimulated to make this conquest. "It wasn't a conquest," he replied. "I grew out of it, or rather it grew out of me. I know it used to infuriate me when my parents moaned about the family temper, and I used to give them something to complain about." In fact he made not the slightest attempt to control his temper at home, but abroad he learnt the need of restraint.

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[3] To 6–10 c.cm. urine add two small crystals of sodium nitroprusside. Dissolve. Add 2 c.cm. of glacial acetic acid. Mix and freely overlay with concentrated aqueous ammonia. A purple or permanganate colour develops where the liquids are mixed.

[4] Deut. med. Woch., 1932, lviii., 206.

Although inheritance may play an important part where either good temper or bad temper is a marked characteristic of the children, a large number of people belong to the neutral group of Galton's investigation; the temper of these, it seems fair to suppose, will be made or marred by circumstance, though the bias need not necessarily be permanent in either direction. Dr. Still draws attention to the intrinsic truth of the phrases "tired and cross," "fat and jolly," and to these we may perhaps add another tag to the effect that "it's easy to be pleasant when things are going right." This was doubtless invented by a neutral-tempered person during a disgruntled phase, and probably has as sound a basis of experience as the other two. The subject might repay further research; or it might not.

ABDOMINAL SYMPATHECTOMY FOR HIRSCHSPRUNG'S DISEASE.

At a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine, held on April 1st, Mr. L. E. Barrington-Ward read a short communication on excision of certain portions of the sympathetic nervous system within the abdomen for the relief of Hirschsprung's disease. He based his remarks on three cases recently treated in this way and as an illustration demonstrated a film showing exactly the operative procedures employed. This indicated very clearly the excision of the two presacral nerves from behind the posterior layer of peritoneum in association with certain nerve plexuses lying over the promontory of the sacrum. Sympathetic nerve-fibres were removed as high up as the origin of the inferior mesenteric artery from the abdominal aorta. As only a short time had elapsed since the carrying out of this procedure in his three cases Mr. Barrington-Ward was guarded in his remarks as to the possibility of cure, but a striking feature of each case was the immediate return after operation of the ability to pass a normal daily motion without the use of purgatives. At the same meeting Dr. J. H. Gibbens demonstrated a little girl in whom a similar operation had completely failed to give any relief and it is obvious that not every case of dilated colon is suitable for this remedy. This is well brought out in a recent paper in which E. W. Rankin and J. R. Learmonth[1] review the present position, especially as regards the modified operative procedures introduced by themselves. They discuss the ætiology of megacolon under five headings: true congenital defects, such as cause Hirschsprung's or Mya's disease, obstructive processes, anatomical factors, infective processes, and neurogenic processes. While it is usually accepted that there is no gross obstructive or faulty nervous mechanism in the congenital group of cases, Rankin and Learmonth hold that the pathogenesis is often a mixed one where various factors, outlined above, may come into play. Nevertheless in the congenital cases the deciding ætiological factor seems to be a neurogenic abnormality; but the subsequent pathological changes differ in no essential from those produced in a dilated colon due, for example, to a constricting carcinoma. This may possibly explain the reason for failure in Dr. Gibbens's patient, for such secondary change may become too advanced for nerve section to prove effective. The lower part of the large bowel receives a dual innervation from the parasympathetic and sympathetic fibres. Sympathetic fibres can be shown by experiments on dogs to carry impulses which lead to dilatation of the colon and contraction of the internal sphincter of the rectum. These fibres come in part from the large ganglia in the upper part of the abdomen, descending on the aorta to the origin of the inferior mesenteric artery, and in part from the mesially directed branches of the four lumbar sympathetic ganglia on each side. From the network of nerves round the root of the inferior mesenteric artery, two large strands become separated and pass out along the trunk of the vessel, while the remainder passes downwards as the presacral nerve or nerves to join the hypogastric ganglia. The operation devised by Rankin and Learmonth consists in resection of this presacral trunk which is followed upwards to the root of the inferior mesenteric artery and the nerves passing out along this artery are then divided. This operation appears to be the one adopted by Mr. Barrington-Ward and illustrated in his film. Rankin and Learmonth in the present paper report eight cases with successful results. The patients varied in age from 2 to 28 years. In some cases the operation on the sympathetic nervous system had been performed as long ago as 1927, so that good opportunity for seeing the actual results of the proceedings was afforded. These results seemed to have been uniformly good and taken in conjunction with Mr. Barrington-Ward's efforts in this country the future treatment of Hirschsprung's disease by what is essentially a simple procedure, as compared, for example, with excision of the colon, should be full of hope.

THE NEWER MATERIA MEDICA.

The three main ideas which have revolutionised medical science since the middle of last century are those of the infective cause of disease, internal secretion, and accessory food factors. As a consequence, therapeutic interest has shifted to some extent from the older drugs of the pharmacopœia to sera and vaccines, hormones, and vitamins, and these now constitute an important part of the modern materia medica. While it is possible to disagree with Dr. Burn's view[1] that insufficient attention is paid to them in the teaching of pharmacology to medical students, everyone will concur in his statement that the newer knowledge finds almost no place at all in the teaching of pharmacists. To remedy the defect, he gave a course of lectures to members of the Pharmaceutical Society in London, and these lectures are the basis of his new book. The reader must not expect, therefore, to find a discussion of all the recent advances in materia medica, but he will enjoy a lucid account of those made in the field which is being most actively cultivated at the present time. The book is intended primarily for pharmacists, but the medical student and practitioner will find in it much information difficult to obtain in any other single volume. He will read of the methods of preparation and of the principles which underlie the action of antitoxins and vaccines; he will find a well-balanced account of the action and uses of the internal secretions, including those of the sexual glands and the anterior lobe of the pituitary; and he will learn something of the great expansion of knowledge of accessory food factors.

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[1] Amer. Jour. Surg., 1932, xv., 219.

[1] Recent Advances in Materia Medica. By J. H. Burn, M.A. [illegible] he Pharmacological Labora- tor [illegible] of Great Britain. London: J. [illegible] 4. 12s. 6d.

CLIMATE, DISEASE, AND FERTILITY.

THE enervating effect of tropical climates on people from temperate zones is well known, and Dr. C. A. Mills[1] thinks their condition is due to the monotony of unchanging good weather. Activity and achievement may thus be less a question of racial character than of fluctuations of climate, and he has set out to inquire whether there is evidence that a bracing climate may over-stimulate certain members of the population to the point of breakdown. As indications of the incidence of such breakdown he has taken the death-rates from exophthalmic goitre, pernicious anæmia, and diabetes, which he classifies as exhaustive diseases. This is to assume a great deal at the outset. The ætiology of these diseases is obscure, and there is no strong case for regarding them as being due to exhaustion rather than to any other cause. The suicide-rate, which he has taken as an indication of the incidence of mental failure, seems to be a less equivocal criterion, though it is hard to believe that climate is the only, or even the chief, factor affecting it. He is able, however, to show a definite correlation between the death-rates from these four causes and temperature fluctuations in different regions of North America. Storms appear for the most part in the north-west of the continent and sweep across the central States, and finally east across New England. Storm frequency is greatest from the Great Lakes area eastward up the St. Lawrence River, but much wider ranges of temperature accompany the storms near their point of origin in the north-west, while from the Great Lakes eastward the temperature changes diminish in amplitude. It is found that the death-rate from diabetes is highest in the west central States and follows quite closely the temperature variability, while the death-rate from exophthalmic goitre shows an even closer correlation with temperature fluctuations, and the distribution of deaths due to pernicious anæmia is much the same.

Dr. Mills goes on to say that a similar geographical difference in severity is associated with leukæmia, heart disease, arterio-sclerosis, angina pectoris, and chronic nephritis, which he classifies as not due to infection—another unproved assumption. He finds that the southern States show a low death-rate from these diseases, and that the area of greatest severity nearly always coincides with the maximum temperature variability. His argument is strengthened by the fact that the total death-rate is lowest where the death-rate from metabolic diseases is highest. The suicide-rate also appears to follow the greatest fluctuations in temperature, except in Florida and the Pacific coast; here the suicide-rate and the death-rates from metabolic diseases are high though this region shows neither high storm frequency nor high temperature variability. At this point Dr. Mills deserts his argument for a fresh one; he quotes the work of Ellsworth Huntingdon and himself to show that human efficiency and productivity are highest in areas where the mean temperature is near 64° F., a condition which applies to the Pacific coast, and ascribes the high incidence of metabolic diseases and the high suicide-rate in this region to a climatic drive applied throughout the entire year with no depressive periods to counterbalance it. Though the correspondence between variability of climate and the death-rates from the causes indicated is suggestive it seems scarcely justifiable to draw any decided conclusions from it. There might be a dozen factors besides climate which could be shown to vary to some extent with the incidence of the diseases chosen, and to regard any one as the responsible factor without further evidence is rather like saying that because cancer and the consumption of tomatoes are both on the increase, tomatoes must be the cause of cancer.

A second investigation[2] by Dr. Mills into the relation between sexual activity and climate is, perhaps, less open to criticism. He finds that the peak of fertility in married women in America is occurring at earlier and earlier ages, and that there is a progressive decline in fertility after 30 years of age; in the south fertility is initially less, but is more sustained, than in the north, and results in greater total productivity. He has also collected evidence to show that a change to an earlier age of onset of menstruation is taking place, and that this change is progressing more rapidly in the northern area of high storm frequency than in the south. He draws attention to the important social applications of these facts: with the peak of fertility and sexual activity coming earlier and the age at the time of marriage changing in the opposite direction, birth control will soon be unnecessary to curb over-population. At the same time the social and sexual problems of unmarried girls are being intensified, and he commends this to the recognition of workers in the social sciences.

FASCIAL PLANES.

FOR some years there has been a tendency among English anatomists to lay less stress on the various layers of fascia which their precursors dignified with elaborate description and many names. They are inclined rather to look on such layers as actually non-existent and to consider the several muscles and vessels and nerves as lying in a bed of areolar tissue, which only falls into layers round them when cut into by a knife. This does not apply, of course, to those true strata which contain a basis of aponeurotic fibres. The practical value of fascial layers remains, for it matters little if the division is made by a knife or by a purulent or hæmorrhagic effusion, and the surgeon is always preceded by a knife in the locality under investigation of these planes. This conception of fascia, however, admits of many descriptions, differing, but of equal value, because the result attained by the dissector will vary in detail according to the methods or preconceptions of any particular worker. Dr. B. B. Gallaudet, of Columbia University, has brought out a small book on fascial planes particularly in the abdomen, pelvis, and perineum.[3] He has studied the fascia in some 34 bodies during the last 17 years. He gives detailed accounts, which differ in many ways from the usually accepted ideas, but in spite of his patient research seem to us to exemplify only another and more complicated variety of the personal descriptions which our conception of fasciæ invite. Readers may find the descriptions difficult to follow, but those whose work lies largely in relation with the pelvic floor may be encouraged to make the attempt; they will at any rate see that there are more ways than one of looking at any object of interest.

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[1] Amer. Jour. Hyg., March, 1932, p. 573.

[2] Ibid., p. 593.

[3] A Description of the Planes of Fascia of the Human Body. By B. B. Gallaudet, Department of Anatomy, Columbia University, New York. Columbia University Press and Humphrey Milford, Oxford University Press. 1931. Pp. 75. 14s.

A paper by Dr. J. W. Davies,[4] dealing with the surgical applications of fascial arrangements in the abdomen and pelvis, provides some illustration of what has been said. There is nothing that is not true in this author's ideas, save the idea itself, and the same may be said about the notions of Mundinus and of a multitude of writers since. The idea, to our mind, is wrong because it is artificial. Schematic renderings and analogies, useful enough for aiding comprehension, do not constitute anatomy. It would seem to us to be a truer description of the connexion of the vagina, for example, to talk of this organ as lying in the well-developed pelvic subperitoneal areolar bed, and thus connected with the levator—and, by the way, the vagina is in direct relation with the levator laterally as far as the fornix. Areolar tissue is always thickened round vessels, and the vagina presents no exception in this way. We could have no particular objection to the plan, as a plan of arrangement, advanced by Dr. Davies, but we cannot help feeling that a better notion of actual conditions can be obtained by adopting an anatomical outlook based on the ideas mentioned above.

AMBLYOPIA OR FATIGUE?

In Dr. Stutterheim's paper on p. 774 of this issue amblyopia is defined as "partial loss of sight devoid of ophthalmoscopic or other marked objective signs," and he claims to have cured many cases of amblyopia associated with weak converging power by treatment by means of prisms calculated to increase the power of the converging muscles. The claim is novel and before admitting it, it may be well to examine the term "amblyopia" more closely. Toxic amblyopia may conform to the above definition but depends on well-known definite causes which point to the necessary treatment. Amblyopia ex anopsia applies, as a rule, to a squinting eye in which although the retinal apparatus may be perfect the power to interpret the retinal image has never been properly developed. It also applies to some cases of congenital cataract in which operation is deferred until after the age at which the power of interpreting the retinal image is normally acquired. Now it is well known that with equally perfect retinal apparatus the power of interpreting the retinal image varies greatly in individuals. The countryman can see many things in the landscape that entirely escape the observation of the visitor from town. The student can read fluently what the hand worker will stumble over, and it is seldom that small children who have recently acquired the art of reading can make out the bottom line of the distant test type, even though their refraction is normal. The difference is not in visual acuity, but in power of interpretation. Even in the same individual this power may and does vary from time to time, and the same conditions which cause weakness of convergence in anyone who is run down in general health are also liable to affect his mental alertness so that at one time he may be able to read 6/6 with ease and at another time not. We would suggest to Dr. Stutterheim that the term amblyopia is hardly a suitable one for a psychical condition that affects both eyes, and that any measures that produce an amelioration of this condition are effective not so much through the muscles as the mind. Mental fatigue may cause weakness of convergence, and any measures successful in curing weakness of convergence may react favourably on mental fatigue.

PAPULAR URTICARIA.

Dr. Rupert Hallam's original observation that hospitalisation in itself is usually sufficient to cause a temporary clearance of papular urticaria (lichen urticatus) has been confirmed by other workers. Since he recorded this interesting fact, four years ago, he has discovered that he can get the same result if the affected children are detained for the nights only, and he now records[1] 11 cases in which no new lesions appeared so long as the patient slept at hospital. The cause therefore appears to have been narrowed down to something which operates during the nights under home conditions. Experiments with bedding, and the like, which was transferred to the hospital, were negative. A similar peculiarity of apparent reaction to home environment has long been known in the case of a much more serious disease—Hebra's prurigo. In this condition the extensor surfaces are covered with intensely irritable papules, and there is usually enlargement of the inguinal and axillary glands. Even in its most severe forms (prurigo ferox, limited to boys and young men) simple hospitalisation has often initiated a clearance, if not a cure. In his summary Dr. Hallam concludes that papular urticaria is an allergic manifestation to an undiscovered antigen which is not a food factor but is probably associated with the home sleeping arrangements. The disease is relatively common, accounting for 20 per cent. of all cases in some years in the skin departments at the Great Ormond-street and East London Hospitals for Children. The actual cause is therefore of considerable importance, and every dermatologist appreciates Dr. Hallam's careful work and observation and will wish him eventual success.

THE REVOLUTION IN SANATORIUM TREATMENT.

At the beginning of the century sanatorium treatment was distinguished by its elemental simplicity. Plenty of fresh air, of food, of rest—that was all. The successes achieved proved how much we starve ourselves of these elementary requisites under modern conditions. It was, however, difficult to be complacent over these results, for no satisfactory reply could be found to the criticism that many of the patients cured by sanatorium treatment would have recovered without it, and that the sanatorium did little or nothing permanent for patients in the second and third stages of tuberculosis. This criticism is, indeed, so pertinent that it might by now have greatly discredited sanatorium treatment as a whole had not the Forlanini revolution intervened. It is necessary only to compare the sanatorium reports 30 years ago with those of to-day to gauge the extent and effects of this revolution. The report for 1931 of the late Prof. Saugman's sanatorium at Vejlefjord in Denmark shows how variedly surgical the treatment of pulmonary tuberculosis has become. In this year there were discharged 138 patients who had suffered made in the field which is being most actively cultivated at the present time. The book is intended primarily for pharmacists, but the medical student and practitioner will find in it much information difficult to obtain in any other single volume. He will read of the methods of preparation and of the principles which underlie the action of antitoxins and vaccines; he will find a well-balanced account of the action and uses of the internal secretions, including those of the sexual glands and the anterior lobe of the pituitary; and he will learn something of the great expansion of knowledge of accessory food factors.

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[4] Surg., Gyn., and Obst., March, 1932, p. 195.

[1] Brit. Jour. Derm. and Syph., March, 1932, p. 117.

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[1] Amer. Jour. Hyg., March, 1932, p. 573.

[2] Ibid., p. 593.

[3] A Description of the Planes of Fascia of the Human Body. By B. B. Gallaudet, Department of Anatomy, Columbia University, New York. Columbia University Press and Humphrey Milford. Oxford University Press. 1931. Pp. 75.

A paper by Dr. J. W. Davies,[4] dealing with the surgical applications of fascial arrangements in the abdomen and pelvis, provides some illustration of what has been said. There is nothing that is not true in this author's ideas, save the idea itself, and the same may be said about the notions of Mundinus and of a multitude of writers since. The idea, to our mind, is wrong because it is artificial. Schematic renderings and analogies, useful enough for aiding comprehension, do not constitute anatomy. It would seem to us to be a truer description of the connexion of the vagina, for example, to talk of this organ as lying in the well-developed pelvic subperitoneal areolar bed, and thus connected with the levator—and, by the way, the vagina is in direct relation with the levator laterally as far as the fornix. Areolar tissue is always thickened round vessels, and the vagina presents no exception in this way. We could have no particular objection to the plan, as a plan of arrangement, advanced by Dr. Davies, but we cannot help feeling that a better notion of actual conditions can be obtained by adopting an anatomical outlook based on the ideas mentioned above.

AMBLYOPIA OR FATIGUE?

In Dr. Stutterheim's paper on p. 774 of this issue amblyopia is defined as "partial loss of sight devoid of ophthalmoscopic or other marked objective signs," and he claims to have cured many cases of amblyopia associated with weak converging power by treatment by means of prisms calculated to increase the power of the converging muscles. The claim is novel and before admitting it, it may be well to examine the term "amblyopia" more closely. Toxic amblyopia may conform to the above definition but depends on well-known definite causes which point to the necessary treatment. Amblyopia ex anopsia applies, as a rule, to a squinting eye in which although the retinal apparatus may be perfect the power to interpret the retinal image has never been properly developed. It also applies to some cases of congenital cataract in which operation is deferred until after the age at which the power of interpreting the retinal image is normally acquired. Now it is well known that with equally perfect retinal apparatus the power of interpreting the retinal image varies greatly in individuals. The countryman can see many things in the landscape that entirely escape the observation of the visitor from town. The student can read fluently what the hand worker will stumble over, and it is seldom that small children who have recently acquired the art of reading can make out the bottom line of the distant test type, even though their refraction is normal. The difference is not in visual acuity, but in power of interpretation. Even in the same individual this power may and does vary from time to time, and the same conditions which cause weakness of convergence in anyone who is run down in general health are also liable to affect his mental alertness so that at one time he may be able to read 6/6 with ease and at another time not. We would suggest to Dr. Stutterheim that the term amblyopia is hardly a suitable one for a psychical condition that affects both eyes, and that any measures that produce an amelioration of this condition are effective not so much through the muscles as the mind. Mental fatigue may cause weakness of convergence, and any measures successful in curing weakness of convergence may react favourably on mental fatigue.

PAPULAR URTICARIA.

Dr. Rupert Hallam's original observation that hospitalisation in itself is usually sufficient to cause a temporary clearance of papular urticaria (lichen urticatus) has been confirmed by other workers. Since he recorded this interesting fact, four years ago, he has discovered that he can get the same result if the affected children are detained for the nights only, and he now records[1] 11 cases in which no new lesions appeared so long as the patient slept at hospital. The cause therefore appears to have been narrowed down to something which operates during the nights under home conditions. Experiments with bedding, and the like, which was transferred to the hospital, were negative. A similar peculiarity of apparent reaction to home environment has long been known in the case of a much more serious disease—Hebra's prurigo. In this condition the extensor surfaces are covered with intensely irritable papules, and there is usually enlargement of the inguinal and axillary glands. Even in its most severe forms (prurigo ferox, limited to boys and young men) simple hospitalisation has often initiated a clearance, if not a cure. In his summary Dr. Hallam concludes that papular urticaria is an allergic manifestation to an undiscovered antigen which is not a food factor but is probably associated with the home sleeping arrangements. The disease is relatively common, accounting for 20 per cent. of all cases in some years in the skin departments at the Great Ormond-street and East London Hospitals for Children. The actual cause is therefore of considerable importance, and every dermatologist appreciates Dr. Hallam's careful work and observation and will wish him eventual success.

THE REVOLUTION IN SANATORIUM TREATMENT.

At the beginning of the century sanatorium treatment was distinguished by its elemental simplicity. Plenty of fresh air, of food, of rest—that was all. The successes achieved proved how much we starve ourselves of these elementary requisites under modern conditions. It was, however, difficult to be complacent over these results, for no satisfactory reply could be found to the criticism that many of the patients cured by sanatorium treatment would have recovered without it, and that the sanatorium did little or nothing permanent for patients in the second and third stages of tuberculosis. This criticism is, indeed, so pertinent that it might by now have greatly discredited sanatorium treatment as a whole had not the Forlanini revolution intervened. It is necessary only to compare the sanatorium reports 30 years ago with those of to-day to gauge the extent and effects of this revolution. The report for 1931 of the late Prof. Saugman's sanatorium at Vejlefjord in Denmark shows how variedly surgical the treatment of pulmonary tuberculosis has become. In this year there were discharged 138 patients who had suffered from active pulmonary tuberculosis. Only 13 were in the first stage of the disease; as many as 88 were in the third stage. Yet, 119 of these patients were discharged cured or improved. Of 104 sputum-positive patients as many as 42 became consistently sputum-negative. Of the 60 who were febrile on admission, 43 were discharged as afebrile. As many as 27 suffered from tuberculosis of the larynx as well as of the lungs. The list of surgical interventions is impressive, not only by virtue of numbers, but also of variety. As many as 69 out of the 138 patients were selected for pneumothorax treatment, which, however, did not prove feasible in 29 cases because of pleural adhesions. Phrenico-exairesis was performed in 25 cases, total thoracoplasty in 6, partial thoracoplasty in 30, supplementary thoracoplasty in 2, simple thoracoscopy in 3, thoracoscopy with cauterisation of adhesions in 13, simple thoracocentesis in 4, thoracocentesis with air substitution or pleural irrigation in 21, Bühlow's drainage in 3, oleothorax in 9, and galvano-cauterisation in 36 cases. Sanocrysin was given to 43 patients, universal carbon arc light treatment to 46, this treatment being supplemented by local quartz light treatment in 5 other cases. About 25 patients enjoyed sun- and sea-bathing in the summer. Only 31·8 per cent. of all the sputum-positive patients treated during the 31 years of the sanatorium's life became sputum-negative, whereas in 1931 40·4 per cent. of the sputum-positive patients achieved this result. Judged by various other criteria, the results of sanatorium treatment at Vejlefjord were much better in 1931 than in the aggregate; and this result is the more striking because the diagnosis of pulmonary tuberculosis is nowadays made to depend on very definite signs.

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[4] Surg., Gyn., and Obst., March, 1932, p. 495.

[1] Brit. Jour. Derm. and Syph., March, 1932, p. 117.

It is encouraging to find Prof. Saugman's successor, Dr. J. Gravesen, continuing to set the pace in the sanatorium world.

THE HÆMOPOIETIC FACTOR IN GASTRIC JUICE.

WE commented last week upon the growing importance of gastric physiology to hæmatology. Dr. J. F. Wilkinson and Mr. Louis Klein, Ph.D., in the same issue described a method for extracting a hæmopoietic factor from stomach which appeared to differ from that found in liver and which they suggested should be called "hæmopoietin." A preliminary report from a group of workers in Cincinnati now adds further to our knowledge of the part played by gastric secretion. Morris and his associates[1] have found that normal gastric juice, after neutralisation, can be given by intramuscular injection to both animals and man without any serious reaction. A negligible reticulocyte response followed the injection of 10–20 c.cm. of such juice, but after concentration by vacuum distillation at a temperature below 40° C. a highly potent product was obtained. Ten hours after the first injection of a concentrate from 450 c.cm. of normal gastric juice there was a reticulocyte response up to 5 per cent., and 36 hours after, a level of 17·6 per cent. was reached, the initial red cell count being 2,100,000 per c.mm., which suggests that the material was of satisfactory potency. "Addisin," after Thomas Addison, is proposed as the name for this effective factor which it is suggested is probably an internal secretion of the stomach. This would account for the poor results obtained by administering gastric juice by mouth. Gänsslen[2] and Wilkinson and Klein have also reported satisfactory results from the parenteral administration of stomach preparations. The relationship or possible identity of hæmopoietin, addisin, and Castle's intrinsic factor remains undetermined.

CURABILITY OF CANCER OF THE STOMACH.

Dr. E. B. Benedict has produced a paper[1] which may usefully be read in conjunction with those of D. C. Balfour and others reviewed in our annotation of March 26th. He describes a group of 29 cases of gastrectomy, in only eight of which the patient survived operation by a year or more. The average duration of symptoms was nine months, but in six of the eight surviving cases the history covered less than five months. In view of the importance of early diagnosis, Benedict, too, emphasises the necessity of early gastro-intestinal radiography. The operative mortality is high, 48 per cent. of the patients dying within a month. In studying the pathology large longitudinal sections were made, and 290 lymph glands were examined. Benedict does not agree with Balfour about the value of the grading of the tumours in prognosis, and has abandoned it because of the difference in types of tumour encountered and the structural variation of different parts of the same tumour; he further describes three cases in which the clinical results would not bear out the histological findings if grading were attempted. The lymph glands were involved in 17 cases as follows: subpyloric, 11; lesser curve, 10; greater curve, 6; retropyloric, 5; and cœliac, 3. Of the eight cases which survived 12 months or more, in six the lymphatic glands were found to be not involved. The size and macroscopic appearance of the glands cannot be relied on to indicate malignant involvement

JEFFERY MARSTON.

THE interesting account of undulant fever which appears in this issue of THE LANCET from the pen of Sir W. Dalrymple-Champneys opens with a reference to the late Surgeon-General Marston's recognition that "Malta fever," as it was then called, was a clinical entity. There are old readers of THE LANCET who may still recollect the distinguished officer in question. Marston was for many years our adviser on medico-military subjects, and was qualified in a very complete manner to give us that assistance. As a young man he had been secretary to the P.M.O. in India; he prepared the schedule of field organisation for the Afghan War 1877; in 1882 he was sanitary officer to the Egyptian Expedition; and he was later head of the statistical and sanitary branches of the Army Medical Board. In 1888 he was P.M.O. of the British Forces in Egypt and was responsible for the medical arrangements at Suakim, and on his retirement from the Service he was appointed president of the Army Sanitary Commission and a member of the Indian Medical Board. His retirement from active service coincided with the breakdown in health of James Wakley, the second editor of THE LANCET, and it was to Marston, in particular association with the late Dr. James Grey Glover, that James Wakley turned for assistance in the conduct of this journal for a long period.

WE regret to announce the death in his forty-fifth year of Dr. Alexander Lewis Urquhart, professor of pathology in the Egyptian University, which occurred on March 28th in Cairo.

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[1] Morris, R. S., Schiff, L., Burger, G., and Sherman, J. E.: Jour. Amer. Med. Assoc., March 26th, p. 1080.

[2] Gänsslen, M.: Verhandl. d. Deut. Ges. f. inn. Med., 1931, xliii., 85.

[1] Edin. Med. Jour., April, 1932, p. 263.

SPECIAL ARTICLES

UNDULANT FEVER.

A CLINICAL REVIEW.*

BY SIR WELDON DALRYMPLE-CHAMPNEYS, BT., M.D., M.R.C.P.,
A MEDICAL OFFICER OF THE MINISTRY OF HEALTH.

THE identification of undulant fever as a clinical entity is due to Marston who, in the Army Medical Report for 1861 (published in 1863), sorted out, with remarkable clinical acumen, from the rubbish-heap of the continued fevers of the Mediterranean area, a disease which he named "Mediterranean or gastric remittent fever."

In 1886 the causative organism was discovered by Sir David Bruce, and was named by him the *Micrococcus melitensis.* It has since been renamed the *Brucella melitensis* in honour of its discoverer, the brucellæ being now recognised as a separate genus, of which *melitensis, paramelitensis, abortus, para-abortus,* &c., constitute species or more likely varieties or strains of a single species. In 1897 Hughes published a classical monograph on the disease which gives a clinical picture of the Mediterranean type which has never since been equalled. We come next to the famous British Commission on Mediterranean Fever formed under the auspices of the Royal Society in 1904 with the coöperation of the War Office, the Admiralty, and the Civil Government of Malta, and with Colonel (afterwards Sir David) Bruce as chairman. On June 14th, 1905, Dr. Zammit, a member of the Commission, found that the blood-serum of five out of his six experimental goats (which had *not* been artificially infected) agglutinated the *Micrococcus melitensis,* and a week later Major (now Sir William) Horrocks found the organism in large numbers in the milk of a naturally infected goat. That this was the chief source of undulant fever among the forces of the Crown in the Mediterranean was soon proved by the virtual suppression of the disease among these men following an order forbidding the consumption of unboiled goat's milk.

The next event to which I would draw attention was the discovery by Kennedy in 1914 of the presence of agglutinins for *Micrococcus melitensis* in the milk and blood-serum of cows in London, an observation confirmed by other workers but for long lost sight of owing to the war. In 1918 fresh light was thrown on Kennedy's observations by Alice Evans in America, who made the illuminating discovery that the *M. melitensis* was very closely related to the *Bacillus abortus,* shown by Bang in 1897 to be the cause of contagious abortion in cattle. From this time onward progress has been rapid, and cases of undulant fever due to one or other member of the genus brucella and confirmed by positive blood cultures, or more often only by agglutination tests, have been reported from all over the world, not excluding this country. In most of the cases occurring elsewhere than in the Mediterranean area the infection has been acquired from cattle chiefly through their milk.

UNDULANT FEVER IN ENGLAND AND WALES.

When I wrote my report on this disease for the Ministry of Health in 1929, only 14 cases of endemic origin (excluding laboratory infections) had been reported in this country. Since then accounts have been published of 14 other cases in England and Wales and 3 in Scotland, and I have received details of 18 additional cases in England and Wales and 1 in Scotland, most of which I have seen, in which the diagnosis was, in my opinion, certain, but accounts of which have not so far been published. This total of 50 cases is, of course, a small one, but I am more than ever inclined to the belief, which I expressed in 1929, that a considerable number of undiagnosed cases occur each year in this country. The experiences of Denmark will perhaps suffice to illustrate the reasonableness of my apprehensions.

Before April, 1927, the presence of human undulant fever in Denmark was quite unsuspected, though contagious abortion in cattle was known to be widespread, as it is in this country. By Dec. 1st, 1928, as the result of the routine testing of Widal bloods for brucella agglutinins in the State Serum Institute at Copenhagen, 500 cases had been discovered, each with an agglutination titre for *B. abortus* of at least 1 : 100, and with the clinical characters of undulant fever. Fresh cases have been reported from Denmark at a corresponding pace ever since, and the United States, Canada, Sweden, Poland, Switzerland, Germany, Holland, and other countries have made similar discoveries though only the United States has experienced an incidence as heavy as that of Denmark.

Kristensen's comment on his Danish cases is worthy of serious attention. He says :—

> "As the presence of abortus bacillus infection among human beings was quite unknown in this country until these examinations took place, there is no reason to suppose that this infection has been especially frequent within the last few months. What has happened is that some of the feverish infections which previously had either not been diagnosed or wrongly diagnosed, were now correctly diagnosed. There is no reason to believe that this infection is more widespread here in Denmark than in countries where cattle breeding is carried on to the same extent; it must be supposed that if systematic enquiries of a similar nature were set on foot in Germany and in England the same conditions would be found."

In Germany such inquiries have been carried out since then (though in that country serological work is not centralised to the same extent as in Denmark), with the result that between Oct. 1st, 1929, and August 30th, 1930, 626 human cases of *Br. abortus* infection were diagnosed. In this country a slowly increasing interest is being taken in the disease, but systematic investigations on a large scale have not been carried out, and I find in my travels over the country that only a small proportion of our profession is alive to the possibility of brucella infections among their patients, and that even in pathological laboratories the examination of Widal bloods for agglutinins for this group is quite infrequent.

CLINICAL.

A great deal has been said and written about the clinical differences between undulant fever of the Mediterranean type, due to infection with the *Br. melitensis,* and the type which is now much more common and widespread, and which is due to the *Br. abortus.* However, the more I read the old descriptions and the more cases I read about or see, the less value do I attach to these distinctions. In illustration of my point I may quote the beginning of Marston's original description of "Mediterranean or Gastric Remittent Fever."

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* Abridged from a paper read before the Paget Club, St. Bartholomew's Hospital.

He says :—

> "By this is meant a fever characterised by the following symptoms and course: A preliminary stage of subacute dyspepsia, anorexia, nausea, headache, feeling of weakness, lassitude, and inaptitude for exertion, mental or physical, chills, muscular pains; lastly, a fever, having a very long course—three to five or ten weeks—marked by irregular exacerbations and remissions, great derangement of the assimilative organs, tenderness in epigastric region, splenic enlargement, slight jaundice without any exanthem. Neither bronchitis nor diarrhœa as a rule. The patient is prone to relapses and the disorder is followed by a protracted convalescence and a chloro-anæmic aspect. . . . There is no fever so irregular as this in its course and symptoms."

The last sentence is particularly noteworthy. The great irregularity will often suggest the diagnosis and, if borne in mind, will often save us from a rash prognosis.

The above word-picture of undulant fever was drawn by the master hand of one who alone had the vision to distinguish in the fog of the remittent fevers the clear-cut features of this formidable enemy of mankind.

From this point I shall speak of the disease chiefly as occurring in this country. Undulant fever is commoner in males than in females (of the cases in Great Britain 33 were males and 11 females), and most often attacks those between the ages of 15 and 45. It is very uncommon in children under 5 years, but the English cases include a boy of 3½ years and an infant of 20 months. The incubation period is probably from 3 to 14 days, but the usually gradual onset makes it very difficult to determine. Though the onset is usually gradual, this preliminary stage may be terminated by a sudden and considerable rise of temperature with an exacerbation of symptoms. Cases with a *really* sudden onset, without any preliminary stage, are very rare, but the type of case in which no abrupt transition occurs is comparatively common, and in these there is sometimes discernible a gradual increase of severity to a maximum followed by a gradual amelioration of symptoms. The "great derangement of the assimilative organs" described by Marston has hardly ever been observed in this country, but anorexia is nearly always present. On the other hand, bronchitis, which was very uncommon in the Mediterranean, is not infrequently present here, though in a mild degree, sputum being almost always absent and definite physical signs in the chest being difficult to detect.

The most striking feature of the disease is the behaviour of the temperature. In spite of the extraordinary variations observed in different cases and in any one case, there is something about these temperature charts which experience enables one to detect as being characteristic of this disease.

For the sake of clearness I propose to divide the temperature charts into three types, but it should be clearly understood that often all types are seen at different stages of the same case, and few charts are quite characteristic of their type throughout the course of the disease. The first and most frequent type of chart usually begins "in the air," that is to say, at the time when the temperature is first taken it is found to be anywhere between 100° and 106° F., though the history makes it probable that the temperature has been raised for some days or weeks before this. In this type, first described by Hughes, and the frequency of which made him suggest the name of "undulant fever" for the disease, the temperature chart shows a number of waves, lasting usually for about a week, and connected by comparatively flat troughs which are often situated some way above the normal line.

The waves are not constituted by a simple
but are composed of a number of zigzags,
usually representing one day's record. And
brings me to the two most characteristic featur
these charts, which are seldom absent throug
the course of a case of any type—namely, (1
afternoon or evening rise, followed by a fall i
night or early morning; and (2) the sudden
swings, a drop of 4° or 5° in an hour being
at all uncommon. I must here mention an impo
symptom which is not included in Marston's des
tion of the disease, but which he does not fail to
elsewhere—namely, the heavy sweats which us
accompany these sudden falls of temperature. T
sweats are often literally "drenching," and somet
(though not as often apparently as in the Mediterra
region) they have a peculiar sour smell, which
characteristic that a physician well acquainted
the disease will detect a case in his ward the mo
he enters it. Relapses are common in this va
of the disease.

To return to the temperature charts, the se
type, called by Hughes the intermittent type, s
a less intense but more hectic fever with less tend
to relapses and fewer and milder symptoms.

The third type of chart is the completely irre
and this may be found in the mildest or most s
cases of the disease. In this type the tempera
wanders along with rises or falls at irregular inte
and of irregular duration, the temperature somet
rising swiftly to a peak, from which it may des
with much greater caution, or suddenly plun
into an abyss only to rise as suddenly a few h
later to its former level. These wild excur
break the monotony of an extensive platea
interrupt unexpectedly the even level of a pea
plain. In spite of this tendency to extreme ir
larity these charts seldom fail to display at some
in their course the evening rises followed by mor
falls which are so characteristic.

One phenomenon which cannot fail to strike
observer is the extraordinary discrepancy bet
the height of the temperature and the general
dition of the patient. In no other disease
which I am acquainted does the patient emerge
a prolonged and severe struggle against fever
so few evidences of the battle detectable.
anomaly constitutes in some cases a valuable a
diagnosis.

I may here mention that the occurrence of abor
in women due to infection with an organism of
brucella group is now proved, and the causa
organism has been recovered in several cases from
vaginal discharge, from the placenta, and from
fœtus.

The duration of the disease is very variable.
seldom lasts less than three weeks, more often
weeks or two months, and many cases are on re
which lasted one or two years. A lady, in w
case I have been interested and in which the diagn
is beyond doubt, has been familiar with her pre
symptoms since 1886! I cannot give you
average duration of the English cases, as some of t
are still ill, and of the termination of other cas
have not yet received information, but the ave
duration of the disease in Hardy's series of 95 recove
cases observed in the State of Iowa, U.S.A., was
weeks.

There is no doubt that the *average* severity of c
infected by the *Br. melitensis* is greater than
of abortus-infected cases, and the same differenc
usually reflected in the mortality-rates. Hug

gives the mortality of the Mediterranean cases as 2 per cent., whereas in Zeller's series of 626 German cases it only amounted to 0·6 per cent. On the other hand, Bierring reports a mortality of 2 per cent. among 150 cases in Iowa, but it must be remembered that in that State infection with the virulent porcine strains of abortus is common.

DIAGNOSIS.

Clinical.—I have already spoken of the clinical diagnosis when treating of the symptoms, so I will confine myself to reiterating the most helpful points, viz.: (1) The character of the temperature chart. (2) A symptom complex, including lassitude, headache, anorexia, and heavy sweats. (3) Prostration not nearly so severe as would be expected from the temperature.

Laboratory.—Positive agglutination to a titre of at least 1 : 100 is nearly always present, and tremendously high titres, which can be higher than in any other disease—e.g., 1 in 20,000—are often found. Blood culture is not always easy with organisms of the *abortus* variety, but it is always worth attempting, even when the pyrexia is moderate. A positive urine culture is less frequently obtained. A relative or even an absolute lymphocytosis is very common, and some degree of anæmia is usually present except in very mild cases.

The diseases for which undulant fever is most commonly mistaken in this country are influenza, enteric fever, and tuberculosis.

TREATMENT.

At present the principal treatment is symptomatic. Pyramidon in grs. 5 doses is useful for headache and for combating insomnia. Aspirin and the other antipyretics should be used with great caution. They have no permanent effect upon the fever—though the characteristic evening falls and the sweats are often wrongly attributed to their exhibition—and they tend to increase the depression which is often a marked feature of the later stages of the disease.

There is no specific treatment for the disease. The intravenous injection of mercurochrome, trypaflavine, Bayer 205, &c., have been tried with very little success, and are by no means free from danger. Killed vaccines of *Br. abortus* occasionally appear to help, but in my opinion they are best restricted to the later stages when the temperature is not rising above about 100° F., but refuses to remain at normal or below. Spicer's Edwenil has occasionally appeared to produce good results, but its action is uncertain, and I have lately heard of unpleasant symptoms produced by it.

Two points with regard to diet. First, the patient should not be kept on slops one moment longer than can be helped. Unless the symptoms and signs point to marked digestive derangement he will manage light, solid, or semi-solid food remarkably well, and it will help him to fight his feverish bouts and to make a more rapid recovery. Secondly, he should not be given raw milk, even certified milk, since it may very well contain the organism he is trying to fight. Efficiently pasteurised milk is quite safe.

ÆTIOLOGY.

The more I have reflected upon ætiology the more formidable has the problem appeared.

First, I may recall Kennedy's discovery of agglutinins for the *M. melitensis* in the milk and blood-serum of London cows. Commenting on his findings, Kennedy remarked: "I think the possibility of a melitensis infection of cows in this country should not be lightly thrust aside. I have heard of two cases of undulant fever in people who have never been out of England, and it is possible there are others undiagnosed." If Kennedy had known the close relationship between the *M. melitensis* and the *Br. abortus* he would no doubt have made inquiries about those cows and would have found that contagious abortion was present in the herds. This disease of cattle is widespread in every dairy-farming country, and is the cause of enormous loss every year to cattle owners. As it is not a notifiable disease in this country no reliable statistics are available, but there is no doubt that the infection is present in at least 80 per cent. of the dairy herds in this country, and some veterinarians and farmers of experience believe that 80–90 per cent. of our milch cows are affected. This does *not* mean that 80–90 per cent. of the cows are excreting the organisms in their milk at any one time, but a cow once infected seldom or never gets rid of the infection, and the organisms are at any time liable to appear in the milk.

We have little information with regard to the degree to which market milk in this country is infected, but Wilson and Nutt examined 488 samples of cows' milk in Manchester by guinea-pig inoculation (the most reliable method), and found that 5·7 per cent. of single milks and 8·8 per cent. of mixed milks contained the *Br. abortus*. I cannot here discuss the interesting problem presented by the curious discrepancy between this widespread infection of our milk-supply (pasteurisation, by the way, kills the organism, but in the provinces most milk is not pasteurised) and the small number of human cases reported. The same phenomenon has been observed in many other countries. In Denmark and other great dairying countries human infection by direct contact with infected cattle is very common, and it is difficult to believe that the same is not true to a certain extent in this country. What we do *not* know at present is whether sheep, goats, pigs, and horses in this country are infected. In France sheep and goats are the chief sources of human infection, and in some parts of the United States porcine infection is presenting a serious problem.

MEDICINE AND THE LAW.

Broken Hypodermic Needle.

ON March 31st an inquest was held on the body of a Bayswater postman who had suffered from acute attacks of bronchitis and asthma and who had been gassed three times during the war. His medical attendant gave evidence that, at the last of a series of hypodermic injections in the chest, the needle broke. He knew the needle had broken in the patient's chest and he explained the danger; but the patient, whose heart was in an extremely bad condition and who had had little food or sleep for a long time and was exhausted, refused to allow the broken piece to be removed either at the time or on the following morning. Post-mortem examination revealed a slight mark on the lung where apparently the needle had penetrated. The pathologist who gave evidence of the result of the examination was asked by the coroner (Mr. Ingleby Oddie) what was the duty of the doctor when a needle breaks. The witness replied that the broken needle should be removed at once; "they move so quickly that you don't know where they are"; he would not expect the needle to puncture the lung. The coroner, in returning a verdict of "Accidental Death," expressed his opinion that death was accelerated by the puncture of the lung. He added a rider that the needle should have been removed by the doctor who, he thought, had listened too much to the patient and not to his own sense of duty; "there are times when the patient's feelings should not dominate, and when it is the doctor's duty to insist." The medical practitioner whose conduct was thus reflected upon had already made it clear that he did insist and had fully appreciated the danger; but the patient had absolutely refused, saying that he wanted only to be let alone. Nobody suggested that the breaking of the needle was a negligent act; it was a mere accident, involving in itself no legal liability. While everyone will agree that a broken needle should be removed immediately, it is perhaps unnecessary to add that doctors have no power to compel a patient to undergo a surgical operation. A patient of mature age and of sound mind has the legal right to decide whether he will have a particular treatment or no treatment at all. No reflection whatever remains on the medical man.

Christian Science and Pulmonary Tuberculosis.

The patient's power to decide for or against medical treatment is illustrated afresh by a recent inquest at Battersea. A girl of 20, who had been for some months in a Christian Science nursing home at Harrow, had died of pulmonary tuberculosis. Giving evidence of the cause of death, Dr. Temple Gray said the girl had had the disease for about five years; had she had the usual hospital treatment early, there would have been the chance of a cure. Dr. Edwin Smith, the West London coroner, after opening the inquest on March 29th, adjourned it for a few days in order to obtain evidence of the treatment which the deceased had undergone. The superintendent of the Christian Science home at Harrow explained that the treatment consisted of prayer; the Christian Science visitor who had paid a daily visit to the deceased at the house in Putney where she died, gave the same explanation. A medical practitioner was called in about an hour before her death. The coroner asked whether this step was taken in order that a death certificate could be given. The suggestion was denied; the visitor gave the explanation that the other people in the house at Putney were not Christian Scientists and it therefore seemed fairer to them to call in a doctor. In answer to questions by the coroner, the Christian Science witness said that in cases of acute pain prayer could send away the pain and was in the witness's belief better for this purpose than morphia; in the case of bad teeth the patient would not be urged to see a dentist; a broken leg would have to be properly set by a surgeon, but scaldings or burnings would be left alone.

The jury found that death was due to general tuberculosis, accelerated by failure to obtain medical treatment. Their view, as elucidated by the coroner, was that somebody at some time should have intervened and insisted on proper medical treatment being given. Criminal neglect was not an element in the case, although, as the coroner pointed out, a finding of criminal neglect might have been justified if the girl had been a few years younger. She was, he said, little more than a child, and people should be careful not to impose their philosophies upon children. No doubt he had in mind Section 12 of the Children Act under which parents and persons in *loco parentis* are criminally liable for neglect if they wilfully neglect a child or young person by failing to provide medical aid. Apart from this provision of the Children Act, which applies only where the victim is under 16 years, there is a common-law liability on any grown-up person who, having undertaken the charge of a human creature helpless either from infancy, simplicity, lunacy, or other infirmity, allows that creature to die by wicked negligence. The deceased in the Battersea inquest case was 20 years of age and thus the Children Act was excluded; she also appears to have had strong views of her own and thus to have been far from helpless for the purpose of the common law. The coroner, however, was clearly obliged to make a full examination of the circumstances.

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

PRESENTATION OF A MACE TO THE ROYAL AUSTRALASIAN COLLEGE OF SURGEONS.

AN event of unusual interest took place at the fifth annual meeting of the Royal Australasian College of Surgeons, when Mr. C. H. Fagge presented a mace—the gift of the Royal College of Surgeons of England—to the Australasian College. The ceremony took place in the Wilson Hall of the University of Melbourne in the presence of a large assembly. After the meeting had been opened by the Lieutenant-Governor of Victoria (Sir William Irvine) and Mr. Fagge had been introduced by the President of the College, he formally presented the mace. "In the name and by the authority of the Council of the Royal College of Surgeons of England," he said, "I ask you on behalf of the Fellows of the Royal Australasian College of Surgeons to accept this mace, which my colleagues hope may remain throughout the existence of the two Colleges an emblem of the brotherly affection which binds us together."

Describing the mace, Mr. Fagge said:

> "In designing the mace for the Royal Australasian College of Surgeons, Omar Ramsden has followed the general form and proportions of that of the Royal College of Surgeons of England, which was executed by His Majesty's goldsmiths. Of necessity the ornaments have been altered and appropriate emblems have been introduced.
>
> "By express permission of His Majesty King George V. the finial is formed by the Royal orb and cross; these emblems are supported by four arms or buttresses suggesting the form of a monarchial crown, and on them is woven a border of briar symbolising the thorny path which leads to greatness. The four panels around the head bear the arms of the Commonwealth of Australia and of the Dominion of New Zealand, of the Royal Australasian College of Surgeons, and of the Royal College of Surgeons of England, between which are oak decorations emblematical of the permanence of the institutions just mentioned. Beneath the head, which, as is fit, is supported by eight British lions, is a wavy strip to symbolise the separating seas. The universal decorations are the rose of England, the seven-pointed star and wattle of Australia, and the fern of New Zealand; and the staff bears the names of the donors—the 24 members of the Council of the Royal College of Surgeons of England in the year 1930-31. The cap bears *the Royal Arms, and round this is the legend that it is the* gift of our college to yours 'as brothers to brothers.'"

In accepting the mace, Sir Henry Newland said: "As President of the Royal Australasian College of Surgeons, I accept with pride and gratitude this most beautiful mace; the generous motives and fraternal sentiments which prompted the gift have touched our hearts. This young College, looking beyond the seas for inspiration, finds it in the ideals and example of the Royal College of Surgeons of England. This College is anxious, too, that the good repute of surgery shall be maintained, and that in the practice of its art the feet of its votaries may not stray from the ath of honour. May the beauty of this mace trengthen our purpose to adhere to all that it ymbolises."

Thirty-one new Fellows of the College were then resented to the President and formally admitted as ellows. Mr. George Robert Adlington Syme was hen presented to the President of the College and dmitted as a Fellow. It was explained that he would ot ordinarily have been admitted to the Fellowship ntil next year, but owing to the fact that this was the ccasion on which the first annual oration, in honour f his father, the first President of the College, was eing delivered, it was deemed fitting that he should be admitted then. Mr. Fagge then delivered the first George Adlington Syme oration, in which he reviewed the life and work of the late Sir George Syme and particularly the part he played in the formation of the Royal Australasian College of Surgeons. On the following day, the honorary degree of Doctor of Medicine was conferred on Mr. Fagge by the Senate of the University of Melbourne.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

CONTROL OF DRUGS IN INDIA.

THE report of the Drug Enquiry Committee has now been published, and its members, Colonel Chopra in particular, deserve congratulation on the promptitude with which they have produced an extremely comprehensive report; the interest in a subject is liable to die down if there is undue delay in publishing the findings. The report proper covers 170 pages, but its perusal is facilitated by a summary of the recommendations. The appendices, which cover another 250 closely printed pages, give the memoranda for which the Committee called and summaries of the evidence presented before them. The Committee recommend that control should be exercised over drugs, both those imported and those manufactured in India; that this control should be essentially a matter for the central government; that there should be a central laboratory in either Calcutta or Bombay, but in addition each province should have a laboratory in charge of a public analyst; that the provincial laboratories should test and report on drugs, other than biochemicals and organo-metallic compounds, submitted to them by the customs or other local authorities, or manufacturers; that the central laboratory should complement and supplement the work of the provincial laboratories, standardise methods of analysis for various climatic conditions and maintain stable standards, train analysts and carry out research work on indigenous drugs; that all manufacturers, importers, and traders in drugs should be registered; that government inspectors should be provided to collect samples for testing; and that legislation should be introduced regarding misbranding and adulteration of drugs. By way of financing these recommendations they suggested amongst other things *additional* import duties of 5 per cent. on all drugs, except crude chemicals, and of 20 per cent. on all patent medicines with undisclosed formulæ.

The Committee made a valiant effort to investigate the question of drugs used by the indigenous practitioners, the vaidyas and the hakims, but they found here such chaos existed that it was impossible to consider the inclusion of these drugs in any legislative measures to be recommended.

Their other proposals include some useful suggestion for the foundation of an organised and registered profession of pharmacy in India. At present there is little to prevent any totally untrained person dispensing and selling medicines or even taking up a post as dispenser in an institution. In most provinces there is no organised course of training for dispensers and in those in which this exists it is inadequate. They also urge the necessity for revising the present quinine policy and suggested that the possibility of producing a standardised cinchona-febrifuge which would be cheaper than quinine should be investigated.

TUBERCULOSIS.

Probably the most outstanding socio-medical problem of the day in India is pulmonary tuberculosis; furthermore it is one that is going to increase. History is, of course, repeating itself; while the more dramatic tropical diseases are being controlled by the efforts of the sanitarians and also by the increased urbanisation of the population, the latter is causing a serious rise in respiratory diseases, especially tuberculosis. The annual reports each year show more and more evidence of this. In Bombay, for example, the death-rate from tuberculosis is 1·1 out of a total death-rate of 21·2 per thousand. It is really more of a social than a medical problem and demands a revolution in the customs and habits of the whole population; especially those connected with purdah and housing.

RETRENCHMENT.

Medical research in India is coming into hard times. At the last annual research workers' conference the Director-General informed us that not only had the total research grant of 5 lakhs of rupees been cut, but in addition 1 lakh of the 2½ lakhs usually voted for the pay of permanent officers of the research department would have to be found out of capital this year. The research programme for 1932–33 had of necessity to be curtailed very considerably and a number of trained research workers dismissed. For a year or so, by drawing capital and exercising the strictest economy, the research fund will be able to carry on a modified programme, but unless the annual grant is soon restored all medical research work in India will cease.

The proposed Cholera Commission has been abandoned; this will be a disappointment to many people outside India who expect us to do something about the disease which, rightly or wrongly, they look upon as India's gift to mankind. Colonel F. P. Mackie, who was to have been in charge of this commission, has now retired, and we have thereby lost one of our ablest research workers. Colonel Mackie was one of the officers of the Indian Medical Service who joined Sir David Bruce's Sleeping Sickness Commission and during the last twenty years he has done valuable work in this capacity. His work in plague and sprue are well known. He was for many years Director of the Haffkine Institute in Bombay.

The All-India Institute of Hygiene was, as we foretold, not opened at the beginning of the year. The building was ready, but the Government, employing their usual dilatory methods, failed to sanction any expenditure so that no posts could be advertised. The Director-designate and his assistant are therefore in the position of administering one of the finest and best-equipped institutions in India, but one whose marble halls are entirely devoid of personnel. We now understand that financial sanction for opening four out of the promised six sections has been given, but that there are other difficulties, such as the selection committee for the staff, to be overcome. In these hard times there is probably sound reason to encourage these dilatory methods. We hope that the Rockefeller Foundation is satisfied that the Government of India are keeping their promise in spirit, if not in deed.

ATEBRIN IN MALARIA.

At the Calcutta School of Tropical Medicine atebrin, a new antimalarial preparation allied to plasmoquine, has been given a trial. In the first eleven hospital cases in which it was used there was almost immediate clinical improvement and rapid disappearance of the parasites from the peripheral blood. Like quinine it does not destroy gametocytes, but when it is given in conjunction with plasmoquine all forms of parasite disappear. In over fifty cases in which only a four-day course of atebrin was given under field conditions, the recurrence-rate was only 14 per cent.; some of these recurrences will have been reinfections as the patients were living continuously in a highly malarious place. The introduction of a real rival to quinine may have far-reaching effects.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

SUPRARENAL EXTRACTS.

It is now 12 years since the "Muirhead régime" was inaugurated by Rowntree at the Mayo Clinic. Dr. A. L. Muirhead in spite of the treatment survived for less than a year, but the striking though temporary relief which he gained from the severe symptoms of Addison's disease encouraged further efforts. Rowntree continued the Muirhead régime (administration of adrenalin by hypodermic, rectum, and mouth to tolerance, and of whole gland or cortex by mouth) with temporary success in a little more than half the cases treated. *Frank A. Hartman, of Buffalo, N.Y.*, in 1927 precipitated from a watery extract of suprarenal cortex with sodium chloride a substance which he named cortin. The method of extraction was modified in June, 1930, by the use of alcohol and ether. The first human case was treated with this extract on July 8th, 1930, and since then six other cases have been treated in Buffalo by Hartman and his colleagues. The report of these cases [1] makes as dramatic reading as anything in the history of insulin. Their third case, for example, had a crisis during the course of treatment. The patient lost consciousness, his muscles went into spasm. Heart sounds were inaudible and respiration ceased "for a time." This man, not many days later, was able to walk more than a mile at a time without fatigue on a daily dose of the extract of 1200 g. of cortical tissue.

Rowntree and Green, of the Mayo Clinic, have treated 22 cases of Addison's disease with an extract prepared by the method of Swingle and Pfiffner (extraction with alcohol and benzene). The immediate results were excellent in 17 cases, but six patients have died (three while under treatment) and three failed to respond to treatment. The same extract, prepared at the University of Colorado Medical School, has been used by C. F. Kemper and P. A. Dickman.[2] In one case the results have been satisfactory. In another the use of the hormone apparently reactivated old tuberculosis so that the advantage gained was large neutralised.

The first attempt to produce the hormone on commercial scale has not been very successful, b efforts in this direction are being continued.

CHILD GUIDANCE.

Sad news is the announcement of the Commo wealth Fund that, owing to the necessity for retrenc ment, their support of the Child Guidance Institu of New York will be discontinued in 1933. In sense, however, the institute has served its purpos The value of child guidance work has been thoroughly recognised that there are now 232 clini in 34 States, most of them established during the la ten years. The high standards of the New Yo institute are reflected in these clinics all over t country. In addition to the 232 clinics abo mentioned, each with the full team of psychiatris psychologist, and psychiatric social worker, there a 442 "mental hygiene clinics" with at least o psychiatrist in regular attendance. The total 674 clinics served last year some 36,000 adults an more than 50,000 children. The National Committ for Mental Hygiene, which reports the above figure finds that "public and private organisations, paren and teachers, physicians, judges, clergymen, soci workers, all have recourse to the child guidanc clinic for help in the solution of juvenile problems.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

MENTAL TREATMENT BILL FOR NORTHERN IRELAN

THE lunacy law in Ireland has for all practic purposes remained unaltered since the passing the Act of 1875. The specialised treatment provid in public mental hospitals in Northern Ireland h been confined to persons definitely certified as unsound mind, and has thus been denied to tho who may be merely threatened with disease or w may be suffering from some temporary form of ment instability. The object of Part I. of a Bill, whi has just passed its second reading in the Parliame of Northern Ireland, is to enable cases of incipie mental disease to be treated in mental hospita without the necessity for certification and witho the intervention of anything in the nature of judic proceedings. Provision is made for voluntary trea ment and temporary treatment. Part IV. of t Bill enables public mental hospitals to provide clini at which extern patients may obtain advice and trea ment, and which will also enable discharged patien to receive the same advantages. It is proposed abolish certains terms which have hitherto be employed in mental illness and which have acquir a sinister and objectionable significance: "lunatic will be replaced by "person of unsound mind "lunatic asylums" by "mental hospitals," a "pauper" by "rate-aided person." With rega to admissions, it is proposed that persons of unsou mind may be received into a mental hospital on simple order of a magistrate supported by a medic certificate. In cases of urgency the patient may removed at once on the doctor's certification anticipation of the justice's order. In such case however, the authority to detain the patient limited to seven days, unless full procedure admission has meanwhile been completed. In t discussion on the Bill it was suggested that hom should be established where patients could be tak or treatment for a short period without having the eeling that they had been inmates of an asylum.

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[1] Jour. Amer. Med. Assoc., March 5th, p. 788.

[2] Colorado Med., 1932, xxix., 105.

DUBLIN CORPORATION AND THE DUBLIN HOSPITALS.

In his financial proposals submitted to the Dublin Corporation the City Manager suggests the reduction by 50 per cent. of the amount of grants to such hospitals as are participating in the benefits of the Irish Hospitals Sweepstakes. He points out that the benefits received have been in fact far beyond all expectations. Last year the City Manager made a similar proposal to the Council, but the Council estored the full amount of the grants as in previous years. He asks the Council to consider the matter afresh this year.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

EDINBURGH BACTERIOLOGICAL SERVICES.

AT present the bacteriological work for the public health department of Edinburgh is done in four different institutions: the University, the Veterinary Department, the Royal Infirmary, and the City Hospital. Dr. Guy, the M.O.H., suggests that it would be best that so far as possible the University bacteriological department should undertake the service in future. This step has already been taken to some extent, for the town pays the University £550 a year for general bacteriological investigations. The Veterinary Department has two sections; it does microscopical work for detection of diseases and parasites in meat, &c., and biological work, involving the use of animals. These latter are used chiefly for the detection of tubercle bacilli in milk. It is now proposed that the biological work should be transferred to the University. The public health bacteriological work at the Royal Infirmary is entirely confined to venereal diseases. This task was undertaken by the Infirmary in 1922, being previously performed partly by the Infirmary and partly by the laboratory of the Royal College of Physicians. During the first year (1923) the number of specimens examined was 21,000, and at that time the Board of Health considered a sum of £2000 a reasonable amount to be paid by the town for the service. But the number of specimens last year was 54,000 and the sum paid remains about the same. Without dislocation the work could be undertaken by the University, and the whole question has been remitted to a small subcommittee, including the professor of bacteriology.

Many years ago, when the City Hospital was opened, Dr. Claude Ker stood out for a laboratory there. This was so obvious a necessity that a laboratory was established, and it is always in active use.

HOMICIDE BY A FEEBLE-MINDED BOY.

A thirteen-year-old boy lately appeared before Lord Anderson in the High Court of Justiciary at Edinburgh on a charge of having struck a small girl with a hammer and killed her. Dr. Dods Brown, physician-superintendent of the Aberdeen Royal Mental Hospital, Dr. J. S. Annandale, medical superintendent of the Aberdeen County Mental Hospital, Kingseat, and Dr. W. M. M'Alister, medical superintendent of Bangour Village, all certified that he was so feeble-minded as to be unfit to plead. Dr. M'Alister said that his intelligence was that of a child of about 8. The Solicitor-General announced he had been in consultation with the proper authorities about the boy's future, and Lord Anderson pronounced an order for detention during his Majesty's pleasure.

EDINBURGH HOSPITALS FOR WOMEN.

Bruntsfield Hospital has been recognised by the Medical Research Council as a centre for research in the radium treatment of diseases of women, and this has enabled the hospital to obtain radon from the Middlesex Hospital, and thus extend the scope of the work. The Council has also granted the Hospital a loan of 125 mg. of radium.

At the Elsie Inglis Maternity Hospital, investigation of maternal morbidity was continued during last year. A total of 1320 confinements were attended —965 in hospital and 355 on the district—an increase of 201 on the previous year. The out-patient department, a steel-house, of the Weir type, was taxed to its utmost, 15,719 attendances being registered there, an increase of nearly 2000. This was due to the growth of antenatal and postnatal clinics. The postnatal attendances were particularly gratifying, and the "follow-up" which was done there was of great value to both mothers and babies. In connexion with the 1320 confinements, there were only two maternal deaths, and the morbidity-rate was 3·8 per cent. This low rate is attributed to the special preventive technique which has resulted from the research carried on at the hospital during the last two years. In the extra nursery accommodation provided there is a Morgenthaler bed for premature or delicate infants, the only one of its kind in the country.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

A MEDICAL STRIKE.

SEVENTY assistant physicians, junior surgeons, and dressers, all employed by the dispensaries of the Jewish hospital, have refused to continue their hospital duties because the Board of the Jewish community, which maintains the hospital, refused to grant them even a modest salary. The Board argued that, in the present critical economic circumstances, when they have a tremendous deficit, it is impossible to encumber their budget with new expenses. Besides, doctors regard these posts as merely temporary, filling the gap between studenthood and private practice; apart from assistants employed in the hospitals, the rest are occupied in three out-patients' departments, working in various districts of Budapest. Furthermore, the Board established these posts directly for young Jewish physicians, to give them the chance of hospital experience, for until quite recently the municipal hospitals of the city, which are in a position to give work to hundreds of young doctors, did not employ Jews as assistants or junior dressers. The "strikers" put their case before the directors of the Hungarian Medical Association, which forbade its members to accept any unpaid appointment, and for the time being the directors regarded these posts as subjects of *cavete,* so that anyone who dared to take them would be unrecognised by the profession. At the same time they started negotiations with the Board of the Jewish community, but the latter, adhering to their resolutions, pointing to the miserable state of their community, more than 30 per cent. of its members being unable to pay their ecclesiastical taxes. The director of the hospital has appointed a small number of physicians-in-chief to attend the out-patient departments—all of which

CORRESPONDENCE

HÆMOLYTIC AND PERNICIOUS ANÆMIAS.

To the Editor of THE LANCET.

SIR,—In his final Goulstonian lecture (THE LANCET, March 26th) Dr. Witts discussed the hæmolytic anæmia of pregnancy. It is important to differentiate between this condition and pernicious anæmia associated with pregnancy owing to the difference in prognosis and treatment. The outstanding features in hæmolytic anæmia of pregnancy are the presence of free hydrochloric acid and enzymes in the gastric juice; a strong tendency to show rapid improvement after parturition to a normal blood picture, especially with suitable treatment; a maintenance of the complete remission even after discontinuance of treatment; and a disinclination to relapse in subsequent pregnancies. On the other hand, pernicious anæmia associated with pregnancy shows achylia gastrica, a grave tendency to fatal termination after parturition (if inadequately treated), and the necessity for continued treatment, the subsequent prognosis being as in ordinary cases of pernicious anæmia. I hope to show in a further paper that true pernicious anæmia occurs in association with and is not due to the gravid state per se. Cases of hæmolytic anæmia of pregnancy have been observed to respond to suitable treatment without further relapse even in subsequent pregnancies, despite discontinuance of treatment, whilst known cases of pernicious anæmia have been kept under observation throughout pregnancies and parturition on carefully adjusted therapy. I have found that in most cases satisfactory treatment consists of intravenous liver therapy, or oral administration of active[1] desiccated hog's stomach preparations. The former is eminently suitable where auto-hæmagglutination exists.[2] Cases of hæmolytic anæmia are able to discontinue all treatment after the blood picture has returned to normal, but in those of pernicious anæmia associated with pregnancy the treatment must be continued indefinitely, as in an ordinary case of pernicious anæmia.

I am, Sir, yours faithfully,

JOHN F. WILKINSON.

Royal Infirmary, Manchester, April 2nd, 1932.

PS.—May I be allowed, referring to another matter wholly, to comment on your annotation of April 2nd upon the paper by Dr. Klein and myself. It would appear as though we were stating that a hæmopoietic enzyme was present in gastric tissue based upon its thermolability above 45° C. We suggest that the substance is of an *enzyme-like* character and may possibly be an enzyme. Our evidence is based upon other observations, additional to the thermolability, such as behaviour in the presence of solutions of differing pH, necessity for a substrate, precipitation with alcohol, &c. We were particularly careful to augment the ordinary hospital diet in the special cases employed by the addition of protein in the form of meat given with the preparation under examination. The name "hæmopoietin" was chosen as not necessarily implying an enzyme character—the usual suffix *-ase* may be added if and when hæmopoietin is definitely proved to be an enzyme.

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[1] Brit. Med. Jour., Feb. 20th, p. 325.

[2] THE LANCET, 1931, ii., 791.

USE OF TUBERCULIN IN DIAGNOSIS.

To the Editor of THE LANCET.

SIR,—I have read with great interest Dr. D'Arcy Hart's report on the Value of Tuberculin Tests in Man.[1] His own investigations appear to be carried out with great care and accuracy, and his conclusions in general sound and logical. I was, however, a little surprised to find Pirquet's reaction described as practically useless, both in the preface (by the Medical Research Council) and by the author himself. Dr. Hart has not given Pirquet a chance. He has himsel performed no Pirquet tests at all, as far as I can see His condemnation is based partly upon the many bad results of former investigators using various "Pirquet tests," and partly on theoretical grounds.

As to the former investigators of the Pirquet test, many of them used tuberculin in various dilutions, the reactions were partly read after 24 hours, and their readings were not measured. When a man is found to be misusing a very simple test, it is not discreditable to the test, but to the man. On p. 13 of Dr. Hart's report we see that quite a number of scientists have had post-mortem controls of their Pirquet tests, which upon the whole confirmed the results of their tests Where are the human post-mortem controls of the Mantoux test? On p. 87 we see that Heimbeck's nurses became Pirquet-positive, "nearly all of them," within one or two years. Dr. Heimbeck has published Pirquet curves reaching 100 per cent. positive reactors among the adults in Oslo, not only among the working classes, but in the middle classes also.[2] The autho ought to be more careful before condemning a tes as "not delicate" enough, when it can give 100 pe cent. positive reactors in the apparently healthy population. Scheel and his school (especially Strom Ustvedt, Léikvam) have given the Pirquet test a more reliable basis than any other tuberculin test

To 10 c.cm. standardised tuberculin is added a drop o liquid carbolic acid. The tuberculin then will keep its fu power for months—at least in a cool, dark place. With glass rod implanted through the cork, one places a drop o the solution on the ether-cleansed skin of the arm. A quite superficial cut is made through the drop with lancet (5–10 mm. length; no bleeding). The arm is kep naked for 10 minutes, and the tuberculin is not washed o afterwards. After two or three days the reaction is read when it is doubtful or negative, the test is repeated at once (Two or three cuts are now to be preferred.) A reactio of at least 2 mm. erythema with palpable infiltration i positive. No control is necessary. Under ordinary circumstances further retesting has been of negligible value.

Our Pirquet test gives, without any repeating, a many positive reactions as 0·1 mg. Mantoux (1·0 mg.?) Nobody has clearly demonstrated as yet that the extr positives given by stronger Mantoux doses are rea reactions. Tuberculous persons have, as Dr. Har says, a marked tendency to non-specific intradermo reactions, partly of the delayed type. In order t master them he has used glycerinated broth controls But the control solution, which is not identical wit tuberculin minus the specific part of tuberculin, i not a control solution. His "extra-positives" ma be pseudopositives. He has chosen a reaction o 5 mm. as a borderline reaction. I cannot see tha this chosen borderline has any convincing scientifi basis.

The repeated Pirquet test is, in my opinion, th better test to-day. Its chief fault is its simplicity most people do not think they need to learn how to perform and read it. Very careful investigations are needed before the Mantoux test with strong concentrations is placed on a reliable basis.

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[1] Med. Research Council Spec. Rep. Series No. 164. Sc THE LANCET, March 5th, p. 521.

[2] Arch. Int. Med., 1931, xlvii., 901.

My excuse for my great keenness on this point is the fact that most of our recent Norwegian studies in the pathology and epidemiology of tuberculosis are based on the Pirquet test, and we would not like our Pirquet work to be included in the works totally condemned by the Medical Research Council.

I am, Sir, yours faithfully,
ROLO HOIJER DAHL.

Ulleval IX, Oslo, March 31st, 1932.

PULMONARY TUBERCULOSIS IN CHILDHOOD.

To the Editor of THE LANCET.

SIR,—Dr. Bentley, in your issue of March 26th, states "that while the appearance of positive sputum disease in any child under 16 years of age is rare, the condition below the age of 10 is a medical curiosity." If he means by "positive sputum disease" a condition in which the child coughs out sputum containing tubercle bacilli his statement is no doubt correct, as children under 10 rarely do this; they swallow it. But if he means, as I believe he does, that tubercle bacilli are very rarely present in the sputum of young children I most definitely disagree with him. As has been said, children swallow their sputum, and consequently it can only be obtained by the stomach washout method described by Meunier and others. If this is done, however, a surprising number of positive cases will be found among young children and even infants. Recently, for instance, in five consecutive cases of the tuberculous type of erythema nodosum I found tubercle bacilli in three, aged 3, 5, and 7 years respectively, while Wallgren and many other continental writers have had the same experience with larger series of cases. Indeed this method is a great help in the diagnosis of tuberculosis in the child and should be used as a routine in all doubtful pulmonary conditions in childhood.

I am, Sir, yours faithfully,
W. ROBERT F. COLLIS.

The Hospital for Sick Children, Great Ormond-street, W.C., April 2nd, 1932.

TOXIC EFFECTS OF PHENOLPHTHALEIN.

To the Editor of THE LANCET.

SIR,—It may be of some interest to your readers to know that in certain cases phenolphthalein, which is now being widely used as an aperient, may give rise to a marked toxic reaction. In my own personal case a normal dose of it produces a violent urticarial eruption covering nearly the whole of the flexor aspects of the forearms, a collar-like circle round the neck, and in lesser degrees the calves and hands are affected. The reaction commences within half an hour of ingestion with intense tingling and itching, and the appearance of large circular areas of erythema which indurate into plaques and finally become blebs which exude serum, and the scars left are purple in colour.

There has lately been put on the market a pill, in which the name Aperione appears in the formula; this would appear to be responsible for the worst attack I have yet had. The manufacturers describe it as "non-toxic, somewhat similar to phenolphthalein." The Extra Pharmacopœia says: "Skin rashes reported in America from phenolphthalein" and "cases of toxic poisoning from submaximal doses," "such ill-effects have not been noted here." There appear to be at least seven names for the drug, the best known of these are Purgen and Laxoin. Aperione is yet another for what is apparently a very similar product.

My objects in writing are firstly that it seems to me that it should be possible for anyone to avoid a drug without having to consult a dictionary of trade names, if such a thing exists. Secondly, that it is possible that mine is not such a very rare case and that others may be wrongly attributed to food poisoning, as personally I had three attacks each due to a different preparation before being able to trace the cause. The same effect is produced in my case by Veramon but in a much milder degree, and I have known the latter to produce hæmoglobinuria in a patient who took a considerable quantity of it.

I am, Sir, yours faithfully,
F. A. PHILLIPPS.

Lower Sloane-street, S.W., March 27th, 1932.

THE PROBLEMS OF MARRIAGE.

To the Editor of THE LANCET.

SIR,—A recent letter in your columns, signed by the honorary medical secretaries of the British Social Hygiene Council, draws attention to the establishment of a Personal Problems Bureau, the consultant being Mrs. Neville Rolfe, the Secretary General of that Council.

In answer to a letter of inquiry from me as to whether the advice to be given "to those about to marry" would include at Mrs. Rolfe's discretion advice as to artificial measures of birth control, I am informed by Mrs. Rolfe that—

> "I am hoping to give assistance on the lines of the handbook on Preparation for Marriage to girls intending marriage. . . . . It does not appear to me that the question of birth control is likely to enter to any considerable extent. In the event of an individual requesting advice on methods they would be referred to the medical profession."

My desire in this letter is carefully to avoid the very disputable point as to whether such advice should ever be given "in preparation for marriage," and the still more debatable point as to whether that advice should be given under the arrangements now proposed.

But there arises for supporters of the British Social Hygiene Council a more general and extremely important problem. I was actively concerned in recommending that this Society (then called the National Council for Combating Venereal Diseases) should be formed as a semi-quasi-official body to undertake educational work conducing to the prevention of these diseases and the protection of the sanctity of family life, by the promotion of chastity and continence. This body has hitherto refrained from action which would imply approval of artificial birth control. The establishment, however, of a consultation centre at which advice in preparation for marriage may include advice on birth control—even if "not to any considerable extent"—we are told by the honorary medical secretaries has received "the full support and approval of the Social Hygiene Council." Furthermore, it is intended that part of the profits coming from these consultations shall be added to the funds of the British Social Hygiene Council.

This obviously is a new departure in policy of great significance, and cannot leave the position of the Council unchanged. Clearly it is now for every subscriber to its funds, including each contributing borough council and county council, to decide whether they are in sympathy with this departure of the

British Social Hygiene Council from the position of neutrality hitherto ostensibly maintained on this most controversial subject of birth control.

I am, Sir, yours faithfully,
ARTHUR NEWSHOLME.

The Athenæum, London, W., March 28th, 1932.

To the Editor of THE LANCET.

SIR,—In a letter appearing in the *Medical Officer* of April 2nd, Sir Arthur Newsholme comments adversely on "the establishment of a Personal Problems Bureau, the consultant being Mrs. Neville Rolfe, Secretary General of the British Social Hygiene Council." The decision of the Council authorising the establishment of the Bureau was taken after full and careful consideration and after consultation with representatives of the members of the British Medical Association. The plan for such a Bureau arose out of a series of lectures on Preparation for Marriage organised in coöperation with the Churches.

Sir Arthur Newsholme draws the conclusion that advice on artificial birth control is to be given by Mrs. Neville Rolfe. This is incorrect. In a letter addressed to him, from which he quotes, Mrs. Neville Rolfe expressly informed him that "in the event of an individual requesting advice on methods they would be referred to the medical profession."

The main objects of the Bureau are to assist parents wishing assistance in handling difficulties in sex training of children and to advise girls intending marriage.

Sir Arthur Newsholme further states that as the Bureau has been established with the sanction of the British Social Hygiene Council this indicates a change of policy on their part in regard to the subject of birth control. This again is incorrect. The policy of the Council has not been changed; advice on artificial birth control will not become part of its work in the future any more than it has been in the past, unless and until some future decision of the Council should reverse the present policy.

I regret that Sir Arthur in support of his personal views should have allowed himself to suggest that in these circumstances subscribers to the funds of the British Social Hygiene Council are called upon to reconsider their attitude to the Council.

I am, Sir, yours faithfully,
KENNETH M. WALKER,
Hon. Medical Secretary, British Social Hygiene Council.

April 5th, 1932.

*** The letter above from Sir Arthur Newsholme is identical with that published last week in the *Medical Officer*, to which Mr. Kenneth Walker refers.—ED. L.

THE DURATION OF THE RED LOCHIA.

To the Editor of THE LANCET.

SIR,—I have seen a considerable number of cases treated by Dr. Hobbs's glycerin irrigation with remarkable success. I think he is right in pointing out that there are degrees of sepsis and that it is not necessary to have a rise of temperature in all cases; and also that when red lochia persist after the seventh day following a confinement or miscarriage, this symptom should be looked upon with suspicion, and glycerin irrigation should be immediately carried out so that no septic focus is left in the uterus. There can be no doubt that these chronic discharges lead to a great deal of ill-health in women, and it is high time that the profession regarded these cases in a more serious light. It is chiefly as a preventive measure that I regard Dr. Hobbs's treatment as valuable. I agree with him that the long list gynæcological cases can be considerably reduced promoting free drainage from the uterus at the earli possible moment, instead of waiting for abnorm signs to make their appearance in the pelvis.

Again, we have all come across cases of fibrosi and arthritis dating from the last confinement miscarriage; and during the last few years in t vast majority of the cases I have seen there has be a history of a prolonged discharge which has remain untreated, and the symptoms of arthritis showed signs of diminishing until the discharge had be cured. The amount of illness amongst married wom under the National Insurance Act is causing gra concern to the friendly societies, and I believe a lar amount of this sickness could be prevented if Hobbs's treatment were more widely known; so th the practitioner who at present adopts the expecta attitude can be provided with a simple a *satisfactory method of treatment in these cases.*

I am, Sir, yours faithfully,
Kensington, April 5th, 1932. RONALD CARTER.

CALCIUM CONTENT OF THE LIVER.

To the Editor of THE LANCET.

SIR,—Miss Wright and I are interested in t *calcium content of the liver.* Might I be allowed request any of your readers, who may be in t position to do so, to send us portions of liver fro women dying from eclampsia or hyperemes gravidarum? We should like roughly ½ lb. of live from each lobe if possible, and the material witho any preparation may be wrapped in waterpro material and posted to either of us at the Pharm cology Department, University College, Gower-stree W.C.1. It is because the method is prolonge the apparatus specially made, and eclamptic live are difficult to obtain, that I have ventured to ma this request.—I am, Sir, yours faithfully,

April 5th, 1932. G. W. THEOBALD.

ANCOATS HOSPITAL, MANCHESTER.—At the annu meeting of this hospital on April 1st, it was stat that the year's working showed a deficit of £13 which, however, was largely covered by legacies. T medical board's report stated that the staff believed th waste of time in the out-patient department could only avoided by rigidly regarding this department as a pure consultative centre.

ROYAL VICTORIA HOSPITAL, BELFAST.—The annu meeting of this hospital was held on March 23rd wi Lady Pirrie in the chair. During the year 1931, 66 cases were treated in the wards, and this was t highest number yet recorded. At the extern departme 47,603 new cases were examined. The total cost of mai tenance and administration was £57,347, and the tot receipts were £56,571. The daily average number of be occupied was 410. During the year 168 road traffic a motor accident cases were admitted; their total cost maintenance was £2175, and of this amount the hospit was paid only £658. A piece of ground has been rente to the Queen's University for the purpose of erecting pathological institute which will eventually be connect with the hospital by a covered way, and under arrangeme with the Queen's University the bacteriological and bi chemical departments of the hospital will be transferr there. Great progress has been made in the erection the new maternity hospital; but £50,000 is still requir to complete the building and to purchase equipmen The board of management and medical staff are anxio to provide accommodation for patients of moderate mea by the erection of a paying patients' block. The Children Hospital, situated in the same area, is almost finished. grouping and equipment this colony of allied institutio will, it is hoped, be almost unrivalled in the British Isles.

OBITUARY

GEORGE MATTHEW ROBERTSON, M.D., C.M. Edin., F.R.C.P. Edin.

WE announced the death last week of Prof. G. M. obertson, which occurred on March 26th at his esidence. Tipperlinn House, Morningside. He had een in failing health for some time and had intimated is intention of retiring from his appointments in the ourse of this year.

George Matthew Robertson was born in 1864. the on of Col. Robertson of Liddington Hall. Guildford. Ie received his preliminary education at Madras ollege, St. Andrew's. and completed his medical raining at the University of Edinburgh, where he raduated M.B., C.M. in 1885. He served for a period as resident physician at the Royal Infirmary, Edinburgh. and having by that time decided to practise as an alienist took a post under Sir Thomas Clouston, then superintendent of Morningside, where he became senior resident assistant. He obtained the diploma of M.R.C.P. Edin. in 1891, and in 1892, being then the senior resident at Morningside. he was appointed physician-superintendent of Murthly Asylum. Here he introduced a villa system of housing the mentally afflicted, and made a considerable name for himself both on the scientific and administrative side of his specialty.

PROF. ROBERTSON.

[*Photograph by Yerbury & Son.*

In 1893 he was elected to the fellowship of his College and in 1899 he was appointed physician to the Larbert Asylum, but shortly afterwards he succeeded his former chief, Clouston, as physician-superintendent of the Royal Edinburgh Hospital for Mental and Nervous Disorders, as Morningside is now termed. This was in 1903, so that for practically 30 years Prof. Robertson was in charge of the institution whose development owes so much to his energies. At the date of his appointment Morningside consisted of the two institutions West House and Craig House, and its reputation under Clouston was a very high one; but the scope of its activities was insufficient to meet the ideals of Robertson, who was a pioneer in the advocacy of the treatment of the insane as sick people—victims of disease in the same way as they might have been the victims of any other disease, and requiring in the same way treatment directed to alleviation and cure. To treat the mentally afflicted as sick people was his unswerving intention, and he was fortunate in finding in the Managers of the Royal Mental Hospital men who supported him in his views, and indeed suggested certain of the channels through which they might be carried out. For some time he had under consideration a scheme, with which his name is always associated. for the opening of nursing homes where patients suffering from incipient mental disorders could be watched, and preventive measures be employed when they still were likely to be efficient. In 1917 the Managers, accordingly, in support of Robertson's scheme, purchased houses in Edinburgh and opened them as private nursing homes, staffed with matrons and hospital trained nurses, to which the mentally sick were admitted on a system similar to that employed in dealing with patients suffering from other illnesses. The success of the institutions, whose inmates were mainly drawn from the upper classes, was such that ten years later the Managers of the Royal Mental Hospital built and opened the Jordanburn Nerve Hospital, where patients of all social grades could be received for examination and could remain for treatment, at nominal rates, on the recommendation of the examining physicians. A lecture theatre for students was attached to this hospital which became the centre for instruction in psychiatry at the University of Edinburgh, and Robertson was appointed lecturer in mental disease to the University. In 1920 the University raised the lectureship to the status of a professorial chair, when Robertson was immediately appointed to the post.

Probably none of his activities gave him greater pleasure than the teaching of students, and by the advances he made in psychiatric education at Edinburgh University he has erected to himself an enduring monument. He prepared his lectures with care, and he took great pains to make his subject interesting and palatable. As a lecturer he was able, with no loss of dignity, to adopt an easy and intimate manner with his class. The quality of his mind made abstract thought difficult for him. and in his lectures he did not indulge in abstruse theorising, which he believed only served to confuse his listeners. His teaching was thoroughly practical, and his aim was to equip the students with the knowledge which would enable them to deal in an enlightened manner with the cases of mental illness they would afterwards meet in practice. In his teaching he made full use of his wide clinical experience, and his phenomenal memory enabled him to enliven his lectures with graphic clinical pictures of cases which had passed through his hands. He recognised that the only way to teach psychiatry was to bring the student into intimate contact with actual cases of mental illness, and so he not only gave excellent clinical demonstrations, but he made his students attend in the wards of the Royal Edinburgh Hospital, and at the Psychiatry Out-patient Clinic of the Royal Infirmary. and take an active share in the treatments.

A special feature in Robertson's far-ranging services to psychiatry was his deep interest in the psychology of childhood, and at his instance a house was furnished in Morningside Park for the reception and study of these little patients under the supervision of Prof. James Drever, reader in psychology in the University of Edinburgh, and a recognised authority on the psychology of childhood.

Robertson's position was acknowledged by the prominent place that he occupied in the official medical world. At the Royal College of Physicians of Edinburgh he was at different times Cullen Prizeman and Morison lecturer and in 1926–27 President. At the Royal Medico-Psychological Association, where he was a medallist and twice prizeman, he was Maudsley lecturer, and in 1922 he occupied the president's chair. He was a corresponding member of several continental societies and the University of St. Andrews conferred the degree of LL.D. upon him. He was an infrequent writer, but an untiring exponent of his science at social and scientific gatherings, where he enjoyed the greatest popularity due to his personality.

Dr. Bedford Pierce writes: "In paying a tribute to the value of Prof. Robertson's services to psychological medicine, I would specially refer to his work in connexion with the Royal Medico-Psychological Association. He was an active member supporting all efforts to improve conditions of treatment, the better training of medical students and of nurses. Those who attended the annual meeting of the Association when he was president will not readily forget the excellent arrangements, the high standard of the discussions, and the president's hospitality. He had the good fortune to possess a genial disposition and he was a delightful host. He was an excellent and fluent speaker, and was a far-seeing man and in matters of policy his judgment was of marked value. In controversy he was always courteous, and took pains to induce others to accept his opinions. He seemed rarely to forget he was a Scotsman, and delighted in his speeches at the Association meeting to explain how Scotland was far in advance of England in the management of mental hospitals and indeed in any direction that might be under consideration. But local patriotism did not exclude wider interests. He edited Dr. Barclay's translation of Kraepelin's monumental work, and recognised Bayle as the discoverer of general paralysis of the insane. Robertson filled with marked ability his important positions. Many have marvelled how it was possible for one man to direct successfully the medical administration of practically three mental hospitals—Craig House, West House, and later Jordanburn—whilst holding the chair of psychiatry and at the same time responding to the demands of a considerable private practice. It is to be feared that at last this was too great a task for even his exceptional powers and so we mourn his loss."

The following appreciation of Prof. Robertson reaches us from a colleague and friend: "Prof. G. M. Robertson's death will cause widespread sorrow to his many friends in this country and abroad, but none will lament his death so much as those who have had the privilege of working with him or serving under him. In many ways he was an exacting chief. He expected a great deal from his assistants, and while he resented inefficiency, no one was readier than he was to appreciate and reward merit and industry. He treated his assistants as colleagues rather than subordinates. He did not demand a slavish obedience from them; he rather encouraged initiative and self-reliance, even from his junior assistants. Like most men of really wide knowledge and experience, he was tolerant of the views and opinions of those less experienced than himself. Nothing gave him greater pleasure than to discuss a problem with his staff, and he was receptive of suggestions no matter from what source they came. He took a deep personal interest in every member of his staff, and he inspired in them loyalty and affection. He rarely failed to animate those around him with his own enthusiasm. His interest did not cease when they were no longer serving under him, for he followed their careers with keen interest, and kept in close touch with them. His qualities would have distinguished him in any walk of life. He was a man of action; with a fearless and buoyant mind. He was imbued with the true spirit of adventure. For him the successful completion of an undertaking was but a prelude to another venture. His life was a crusade against reactionary tendencies and archaic methods of treating mental disease, and the value of the reforms he effected is now universally acknowledged. His life was devoted to the improvement of the methods for treating the mentally afflicted. He had great social gifts. He was a delightful host, and a vivacious conversationalist. His cheerfulness and good humour never deserted him, and he inspired confidence and affection in all who came in contact with him. It is difficult to realise that he is gone, and it is certain that his vital personality will continue to exert an enduring influence on all who were intimately associated with him.

> "And now that thou art lying, my dear old Carian guest,
> A handful of grey ashes, long, long ago at rest,
> Still are thy pleasant voices, thy nightingales, awake,
> For Death, he taketh all away, but them he cannot take."

Prof. Robertson married Lilias, daughter of the late Daniel Ritchie, who died in 1914, and is survived by one son.

RUSHTON PARKER, M.B., B.S.Lond., F.R.C.S. Eng.,

PROFESSOR OF SURGERY IN THE UNIVERSITY OF LIVERPOOL.

THE death of Mr. Rushton Parker, the veteran professor of medicine in the University of Liverpool, was announced last week in the 86th year of his age. He had held the chair of surgery since the development of University College, Liverpool, into the University of Liverpool.

Rushton Parker was born in Liverpool in 1847 the eldest son of a medical practitioner in the city, and there received his preliminary education, proceeding to University College, London, to complete his medical studies. He was a distinguished student and the recipient of scholarships and medals, was house surgeon to University College Hospital in 1869, and demonstrator of anatomy in the medical school during the two following years. He then returned to Liverpool on receiving the appointment of surgeon to the Stanley Hospital, an institution which he served for six years, until in 1878 he was appointed assistant surgeon to the Royal Infirmary. Here he was already well known, for he had been a demonstrator in the medical school attached to the infirmary during the period that he was on the staff of the Stanley Hospital. At the school he now became lecturer on surgery and teacher of practical and operative surgery, and in 1882, while still assistant surgeon at the infirmary, he became professor of surgery at University College, Liverpool. This college, founded in 1881 and

PROF. RUSHTON PARKER.

[*Photograph by J. Bacon & Sons*

incorporated into Victoria University in 1884, became by Royal Charter the University of Liverpool in 1903, since which date Rushton Parker held the chair of surgery.

Throughout his long career Rushton Parker was especially interested in mechanical surgery, while more than 50 years ago he did pioneer work in the surgery of tuberculosis and in the perfecting of the radical treatment of hernia. He published throughout a long range of time, notes on work which had come under his own hands, notably a paper on the extirpation of enlarged lymph glands which appeared in the *British Medical Journal* and another which was contributed to the proceedings of the Royal Medical and Chirurgical Society on ununited fractures healed by bone particles. In "Heath's Dictionary of Surgery" he wrote the articles on Peritonitis and on Diseases of the Nose, and in the *Clinical Journal* he published a practical paper on simple and compound fracture of the nose. He was also the author of a communication to the International Medical Congress of 1881 on the use of Thomas's splints.

To many generations of Liverpool students and doctors Rushton Parker has been a familiar figure, and those who never knew him in his active professional days will long recall his flowing Inverness cloak and sturdy short-stepped gait. "Now that he is no more among us," writes a member of the present University staff, "we hear stories of a kindly nature quite unsuspected by those who were brought into contact with him only as casual acquaintances. It was a kindliness extended not only to his friends, but to any who crossed his path who in the way of duty or by stress of fortune found themselves in difficulty, loneliness, or trouble." In his early days Rushton Parker was marked by openness of mind and a readiness to see and admit the value in what was new. Lister's principles were recognised at once by him as right, and were introduced into the practice at the Infirmary immediately. He was one of the first to recognise the genius of Hugh Owen Thomas and William McEwen, and that at a time when the former was not a persona grata with the profession at large. It was owing to his interest and encouragement that Thomas was persuaded to publish an account of his splints, and when the time came for the professor to accept his portrait from his admirers there was found faintly outlined, at his own request, upon the portrait a Thomas's splint.

Apart from his professional attainments he was a man of wide culture. He loved good books and good music and he was also a linguist of considerable parts. He was a member of the Geological Association and the Liverpool Geological Society.

Rushton Parker married in 1884 Catherine Elizabeth, the daughter of the late Mr. Thomas Bickerton, who predeceased him in 1924.

DR. MARY CONSTANCE TUGMAN, who with her mother was knocked down and killed by a motor lorry in Newbury, Berks, on March 6th, was 33 years of age. Five years ago, having qualified from the London School of Medicine and St. Mary's Hospital, she decided on hearing from her uncle, the Archdeacon of Johannesburg, of the terrible need of the native mothers on the Rand, among whom the infant mortality-rate is 750 per 1000, to go out as a medical missionary. Her mother, who had done rescue work in England and South Africa, and had trained as a midwife, went with her, and together they opened a clinic in a back room of a native priest's house in Sophiatown, where they weighed babies, instructed native mothers in the care of their children, and treated the sick. Dr. Tugman also visited patients in their primitive homes, travelling about, often alone, in a motor-car with her equipment. In this way she treated 6000 cases in one year. Two other women doctors joined her later, and together they opened and took charge of ten clinics. Work on a nursing home was begun in 1930, but Dr. Tugman did not see this completed.

DR. ALEXANDER DOUGALL BLACKADER, whose recent death is announced, was a graduate of McGill University, Montreal, and won a distinguished position in the University and the city. He was professor of therapeutics and pædiatrics, and as a specialist in children's diseases had a wide reputation. He became editor of the *Canadian Medical Association Journal* after the war, when Sir Andrew Macphail retired from this post, and held the editorship until recently with marked success. On his resignation last year, the Association established a Blackader lectureship in Pædiatrics in the University.

In his 59th year Dr. CHARLES HERBERT MOORHOUSE has died at Leeds where for many years he had been prominent both as practitioner and citizen. He received his medical education in the town, and on graduating as M.B. Vict. in 1897 took up resident appointments at the General Infirmary before entering on practice. His direct association with public affairs began in 1910 when he unsuccessfully sought election to the City Council. Not long afterwards he succeeded, and in the years that followed he twice became an alderman. For nearly 11 years he acted as chairman of the health committee, and he was made a justice of the peace in 1924. He leaves a widow and one daughter.

DR. FRANCIS HENRY BODMAN, who has died at Bristol at the age of 87, was senior member of a large medical family. A graduate of Aberdeen, where he took the degrees of M.B. in 1870 and M.D. in 1872, he also studied at St. Bartholomew's Hospital. Entering practice in Devizes he became physician to the North Wilts Dispensary, but in the 'eighties moved to Clifton, where he became connected with the Bristol Homœopathic Dispensary and later the Homœopathic Hospital. Here he was a member of the staff for many years, as are two of his sons, Dr. J. H. Bodman and Mr. C. O. Bodman, at the present time. A third son, Dr. Alan Bodman, lives in Lisbon, while two grandsons are carrying on the medical tradition of the family in Bristol.

DOUBLE INFECTION.—In his annual report Dr. C. Barclay Reekie, medical superintendent of the West Fife infectious diseases joint hospital, states that there was only one death in the scarlet fever wards, and that there have been only two out of the 1885 cases admitted during the last four years. There had, however, been an increase in the mortality-rate from diphtheria, mainly as the result of the lack of early treatment. The medical staff are anxiously awaiting the completion of the observation block with 24 cubicles and accommodation for 48 patients. The eight existing observation wards have only attacked the fringe of the difficult problem of double infection. The hospital was designed for the preferential treatment of scarlet fever, diphtheria, and enteric fever, but the remarkable change in the incidence and rate of mortality of infectious diseases and the extension of the list of notifiable diseases have made the provision of cubicle accommodation necessary.

MEDICAL NEWS

University of Aberdeen.

On March 30th the following degrees and diploma were conferred:—

LL.D. (Hon.).—Sir Buckston Browne, F.R.C.S.

D.Sc.—R. A. Cleghorn, M.D.

M.D.—Robert Dawson and H. C. R. Gunter.

M.B., Ch.B.—Sheila Thomson (with second-class honours), Alexander Anderson, D. G. Anderson, J. L. Carle, J. J. Elphinstone, Agnes K. Forbes, Andrew A. Forbes, George Geddes, William Goldie, A. A. Harper, J. W. A. McIver, J. R. M. Mackie, H. W. T. Martin, David Middleton, W. N. Murray, J. C. Niven, J. W. Pickles, W. S. Pollock, E. D. Robb, John Warrack, and D. B. Watson.

D.P.H.—M. W. Keith.

University of Edinburgh.

At a graduation ceremonial on June 30th it is proposed to confer the honorary degree of LL.D. on Mr. D. M. Greig, conservator of the museum of the Royal College of Surgeons of Edinburgh, and on Emeritus Professor Arthur Robinson, who has lately retired from the chair of anatomy in the University.

University of Glasgow.

Among recipients of the honorary degree of LL.D. on June 15th will be Dr. Alessandri Roberto, professor of surgery in the University of Rome, Dr. A. Brown Kelly, consultant for diseases of nose, throat, and ear at the Glasgow Royal Asylum, and Sir James Alfred Ewing, late principal of the University of Edinburgh.

University of Birmingham.

Five Withering lectures on Some Aspects of Human Biology will be given by Mr. C. J. Bond, F.R.C.S., in the Medical Faculty Buildings at 4 P.M. on Wednesdays, April 20th and 27th, and May 4th, 11th, and 25th.

Post-graduate Course in Cardiology.

At the Liverpool and District Hospital for Diseases of the Heart a fortnight's course in cardiology will be held from April 27th to May 10th. The sessions will be from 3.30 to 5.30 P.M. Early application should be made to Miss Lewis, the secretary, at the hospital.

British Institute of Philosophy.

A course of six weekly lectures on the Foundations of Moral Values will be given by Prof. J. H. Muirhead on Wednesdays at 5.45 P.M., beginning April 27th, at University Hall, 14, Gordon-square, London, W.C.1. A syllabus can be obtained on application to the director of studies at University Hall.

International Congress of Psychology.

The tenth International Congress of Psychology will be held at Copenhagen from August 22nd to 27th. We are informed that after the congress there will be opportunities of visiting certain German and Austrian institutes of psychology. Elaborate programmes are being arranged for periods up to Sept. 14th, and particulars may be had from Prof. Dr. D. Katz, Moltkestrasse 13, Rostock (Meckl.), Germany.

National Institute of Industrial Psychology.

Dr. C. S. Myers, F.R.S., principal of the Institute, will give three lectures on Psychological and Social Factors in Business Rationalisation at 5.30 P.M. on Wednesdays, May 4th, 11th, and 18th, at the London School of Economics and Political Science.

National Institute of Child Psychology.

This institute (formerly the Children's Clinic) has been obliged to cut down some of its activities owing to shortage of funds. It is, however, carrying on at 20, Warwick-crescent, London, W., with a smaller staff and a reduced number of cases, selected for their special clinical interest.

Auxiliary R.A.M.C. Funds.

The annual meeting of the members of the Auxiliary R.A.M.C. Funds will be held at 5 P.M. on Friday, April 22nd, at 11, Chandos-street, Cavendish-square, W.1, when the officers and committee for the current year will be elected.

Central Association for Mental Welfare.

A course for those engaged in the training of mental defectives will be held in London from July 2nd to 23rd, under the auspices of this association (24, Buckingham Palace-road, S.W.1). It will consist of three weeks' training in methods of teaching defectives in occupation centres and institutions, including special methods for low-grade types. Students are recommended to supplement the course, if possible, by spending a week in a certified institution for defectives; the association will make arrangements for this additional week if desired.

London Hospital Medical College.

The Liddle triennial prize, of the value of £120, is offered for an essay on the Causes and Differentiation of Anæmias. Particulars will be found in our advertisement columns.

King's College Department of Anatomy.

The Hambleden Department of Anatomy will be opened at King's College at 3.30 P.M. on Wednesday, April 27th, by the Earl of Athlone, Chancellor of the University of London.

Royal Sanitary Institute.

A meeting will be held at this institute, 90, Buckingham Palace-road, London, S.W., at 6 P.M. on Tuesday, April 12th, when a discussion on the Bacteriology of Milk and Methods of Sampling will be opened by Dr. T. S. Keith and Mr. H. W. Walters.

National Safety Congress.

This congress, arranged by the National "Safety First" Association (119, Victoria-street, S.W.), will be held in London from May 4th to 7th. There will be a session on Safety in the Home at 10 A.M. on Thursday, the 5th, in the Caxton Hall, Westminster.

Leeds Maternity Hospital.

Last year there were 1715 births in the Leeds Maternity Hospital and 631 in the branches, an increase of 116. Of the total births in Leeds 32 per cent. took place in the Maternity Hospital.

Anaphylaxis from Bee-stings.

In connexion with the correspondence on this subject in our issues of March 12th and 19th, we are informed *that at the annual meeting of the Apis Club (the* English branch of the International Organisation for the Study of Bee-keeping) Dr. Keith Thompson will give an address on Bee Venom. The meeting will be held at St. Bride's Institute, Fleet-street, London, W.C., at 3 P.M. on Wednesday April 20th, and members of the medical profession are invited to attend.

The Portrait of Dr. Alfred Cox.

Sir Arthur Cope's portrait of Dr. Alfred Cox has been transferred to Burlington House, and we are asked to advise those of our readers who see the picture at the exhibition and who desire copies, to communicate with Mr. Bishop Harman at the B.M.A. House, Tavistock-square. The charges for these copies, carriage paid, are: engraved *artist's proof (signed), £4 4s.; a print, £2 2s.*; photogravure (17 in. by 14 in.), 14s.; oil facsimile (12 in. by 9½ in.), 6s.

"Journées Médicales," Evian.

The Medical Society of Evian-les-Bains announces the holding, for the second time, of "Journées Médicales" in the spa during the month of September, 1933. Prof. Lemierre will preside over the sessions, which will be *devoted to the study* of Renal Insufficiency. In *this* connexion the Société Anonyme des Eaux Minérales d'Evian-les-Bains offers a prize of 10,000 francs for the best original work on the Semeiological Value of Tests of Provoked Diuresis. The prize is named the Prix Chiais, in memory of the well-known hydrologist. The competing manuscripts must be anonymous, and reach the head office of the Société des Eaux Minérales d'Evian, 21, Rue de Londres, Paris (9e) not later than May 15th, 1933. They must be written in French. All information concerning the competition may be obtained from the Society at the above address.

St. Mary's Hospital Institute of Pathology.

A course of lectures on Pathological Research in its relation to Medicine will be given at the Institute of Pathology and Research, St. Mary's Hospital, London, W., at 5 P.M., on Tuesdays from April 26th to June 14th. Sir Almroth Wright, F.R.S., principal of the Institute, in opening the series, will speak on a New Body of Immunological Doctrine. The subsequent speakers will be Dr. Hugh Cabot, of the Mayo Clinic, on the Present Position of Transurethral Prostatectomy; Major Meurice Sinclair on Fractures of the Lower Extremity; Prof. E. D. Adrian, F.R.S., on the Nervous *Mechanism of Respiration*; Prof. Martin Hahn, of Berlin, on the Lübeck Trial and the Scientific Principles involved in Calmette's Inoculations; Dr. Donald Hunter, on the Clinical Significance of Studies in Calcium Metabolism; Sir Henry Dale, Sec. R.S., on Recent Work on Hormones of the Circulation; and Prof. R. T. Leiper, F.R.S., on Helminth Migrations. The lectures are open to members of the medical profession and students without fee.

NOTES, COMMENTS, AND ABSTRACTS

EPIGASTRIC PAIN.*

By T. C. Hunt, M.D., M.R.C.P.,

PHYSICIAN IN CHARGE OF OUT-PATIENTS, ST. MARY'S HOSPITAL.

Epigastric discomfort or pain, with or without a relationship to food, is commonly attributed to a primary gastric cause, but many other conditions may produce gastric disorder or gastric symptoms.

The diagnosis must therefore be made in the first place between three great groups of causes; (1) general diseases; (2) local diseases elsewhere in the abdomen; (3) primary gastric diseases. Full examination of the patient as a whole will generally exclude the first group; mild or severe heart failure, general arterio-sclerosis, renal disease, pulmonary tuberculosis, and tabes dorsalis, for example, can be excluded by a full clinical examination of every system in the body. The commonest non-gastric abdominal lesions to cause epigastric pain and discomfort are cholecystitis, appendicitis, and colitis. The symptoms alone may not always be sufficient to differentiate these, but careful inquiry into actual colic, jaundice, right iliac or hypochondriac pain, pyrexia, or relation of the pain to defæcation or passage of flatus may help.

If, however, the condition appears to be gastric without features suggesting disease elsewhere in the abdomen, there are four main possibilities: (1) carcinoma; (2) ulceration of the stomach or duodenum; (3) gastritis; (4) primary nervous or functional disorder of the stomach with or without secondary gastritis. I propose to consider a few points only in the diagnosis of these four conditions.

Carcinoma.

The typical picture of carcinoma ventriculi is so well known that I shall only refer to one or two special symptoms. Carcinoma must, of course, be suggested at once by any freshly commencing indigestion in a patient over 40. It is not, however, very uncommon for growth to appear after a long history of dyspepsia due to gastritis, so that the length of history is not in itself any proof that the condition is non-malignant. Secondly, pain—at least at first—is far less common than mere discomfort, which is apt to be marked soon after meals, but may persist even when food is withheld. The anorexia found with it is too well known to require any comment. Severe pain, nausea, and vomiting are generally late symptoms.

A palpable tumour in carcinoma of the stomach is a late sign. It is often possible, however, to feel a small pyloric growth when the patient is standing, even if it is impalpable lying down; examination in the erect position is a useful aid in diagnosis. The radiologist, when screening a patient standing, not infrequently feels a lump which has not been felt by the physician examining his patient on the couch. On the other hand, in general, the larger the primary stomach growth the fewer the metastases, and vice versa, so that a large growth *does not necessarily* mean an inoperable one. Even when seen at operation, tumours are apt to be deceptive, as in a case I saw recently.

A tumour of the pylorus was found to be inoperable as long ago as 1896 by one of the surgeons in this hospital, and the patient brought to me in 1931 an excellent account of his case, shown in 1897 at a medical meeting in London, emphasising the remarkable benefit to be gained by gastro-enterostomy with a Murphy's button in restoring nutrition in hopeless cases of malignant pyloric obstruction! It was, of course, a cicatricial pyloric ulcer, and the patient is quite well to-day, having had no further gastric symptoms.

There are three less widely recognised symptoms that may occur early and are worthy of comment: bleeding and anæmia, fever, and thrombosis.

(1) *Bleeding* is very frequent in the shape of slight continuous loss without any gross hæmatemesis or melæna. It can often only be detected by the chemical tests for occult blood, the stools appearing normal to the naked eye. Unsuspected bleeding may lead to anæmia, which is not uncommonly the predominating symptom. *Any unexplained anæmia, with or without abdominal symptoms or wasting in a man over 40, should at once raise a suspicion of gastric carcinoma.* The appearance of the patient often resembles pernicious anæmia. There may be nothing abnormal to feel in the abdomen, as in the following case.

Male, aged 58. Weakness and dyspnœa for five months. No indigestion except for one day seven months previously. No pain or vomiting. Appetite good. Very pale. Blood count, 3,600,000 red cells; hæmoglobin, 40 per cent. Achylia gastrica. No abdominal tumour felt. Occult blood present. Post mortem small pyloric carcinoma with secondary deposits in lungs.

On the other hand, there may be a large tumour which may be mistaken for a spleen, as in the following case.

Male, aged 58. Phlebitis both legs, and œdema ten months. No anorexia; no epigastric discomfort or pain. No vomiting. Weakness and pallor six months. Blood count 4,400,000 red cells: hæmoglobin, 50 per cent. Large tumour in left hypochondrium at first thought to be splenic. X ray: extensive carcinoma of body of stomach. Occult blood present.

(2) Some *fever* is quite common—generally of a low intermittent type, so that occasionally the case resembles that interesting disease, "P.U.O." Any serious degree of fever is highly suggestive of metastases in the liver, of which it is a very frequent (some say a constant) feature.

(3) *Peripheral venous thrombosis* is very suggestive. An apparently unexplained femoral thrombosis, especially if other thromboses occur elsewhere, in a patient over 50 is sometimes evidence of gastric carcinoma. Thromboses may be so frequent as to constitute the condition described as thrombophlebitis migrans, in which visceral as well as peripheral thromboses occur. Some fever is generally present. It is not at all uncommon for the thrombosis to withdraw attention entirely from any digestive symptoms. I have recently seen three patients at the hospital in which recurring phlebitis was the only symptom complained of; in two of them nothing in the history pointed towards a gastric carcinoma.

Peptic Ulcer.

Anxiety neurosis, neurasthenia, worry, strain, and emotions may cause marked dyspeptic symptoms of purely nervous origin. In such cases the indigestion is generally found, on careful questioning, to follow primary nervous symptoms; the nervousness has not followed the indigestion. At the same time, any fairly long-standing nervous disorder of the stomach may, through the secretory and motor irregularities produced, lead to a true organic catarrh or gastritis. *In practice, therefore,* we are forced to the diagnosis of gastritis and nervous indigestion by a process of exclusion, in which the possibility of ulcer must take first place.

HISTORY.

The typical history of the intermittent pain of peptic ulceration is too well known to require comment. It is important to remember, however, certain points about this history. In the first place it is generally pain and not discomfort that occurs—pain that may be severe and intense, and pain that makes a patient frightened of getting it again. Thus, even in his free periods, the ulcer patient is generally careful of his diet, whereas the chronic appendix or colitis patient, for instance, is apt to forget all restrictions when the pain is not present. Ulcer is certainly the commonest cause of stomach pain, and must be considered in every doubtful case of chronic indigestion, however atypical. The pain is particularly apt to go through to the back, where there may occasionally be found an area of reflex hyperæsthesia close to the spine in the tenth, eleventh, or twelfth intercostal spaces. Ulcer pain does not always show the classical relationship to meals, and Hurst [1] says that in half the cases of gastric ulcer the history is not characteristic.

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* Based on a lecture delivered at the St. Mary's Hospital Post-graduate Course.

On the other hand, the pain tends to be fairly *constant* in character and site.

CONSTANCY.

Thus the ulcer patient when questioned will usually point out his most tender spot with one or two fingers; other patients, particularly cases of nervous indigestion, will generally use the whole hand and move it over a large area of the upper abdomen. Ulcer patients will nearly always give the same story on different occasions; other patients may give almost completely different accounts of their troubles each time they are questioned.

The age of onset of the symptoms is important and may need very careful questioning—not more than 10 per cent. of ulcers begin before the age of 20, so that a long-lasting indigestion beginning before this age is unlikely to be due to ulcer, and is perhaps most commonly due to a chronic appendicitis, which so often begins with an acute attack in early adult life.

Taking ulcers as a whole, probably between 4 and 5 to 1 occur in males, particularly of course the duodenal ulcers, and a great proportion appear to begin between the age of 30 and 35.

Nausea is not common with ulcer, but is more suggestive of large bowel or gall-bladder disorder. It should always, I think, make us suspect a chronic appendix, cholecystitis, or colitis rather than a lesion of the stomach itself. *Vomiting* is also probably as common in cholecystitis as it is in peptic ulcer. *Water-brash*, on the other hand, is very suggestive of a gastric lesion, and seems particularly common with duodenal ulcer. It is not so often a nervous phenomenon as is generally believed.

It must be remembered that *neurosis* is a highly frequent associate of ulcer, and it is remarkable how much affected are the symptoms of ulcer by worry, anxiety, and fear. Ulcers are not indifferent to psychic states any more than they are indifferent to season and climate. It is very easy to be deceived into thinking that an organic lesion could not possibly be so seriously affected by mental states as patients sometimes say their symptoms are.

One patient whom I saw recently was an extremely neurotic schoolmaster who told me that after interviewing parents about their boys he was always prostrated with intense epigastric pain and profuse vomiting for several hours. He had been invalided from the Army with neurasthenia and had seen numerous boards since and continued to draw a pension. His radiogram shows a very large penetrating gastric ulcer and a probable duodenal ulcer as well.

The pain of ulcer is particularly apt to *wake patients at night*, and pain which awakes patients who have once fallen to sleep must always be regarded as organic unless completely proved otherwise. On the other hand, pain which begins when patients go to bed and prevents them getting to sleep, is often non-organic, since the quiet in bed allows a nervous patient to think more of his symptoms and may enormously exaggerate his condition. Pain which is made worse or prevents a patient *lying on the left side in bed* is also suggestive of duodenal ulcer, and I think this may be due to the weight of the liver dragging on the first part of the duodenum and stretching the ulcer surface, perhaps with adhesions. It is rather rare for ulcer pain to be present first thing in the morning before any food is taken, whilst colon and chronic appendix discomfort is often felt at that time. Ulcer pain is not, as a rule, affected by defæcation, the passage of flatus or the use of purgatives, whilst "bowel" pain often is.

THE CAUSE OF ULCER PAIN.

We are apt to attribute all forms of gastric sensations to acidity, and to speak of hyperacidity as a type of indigestion and a cause of pain in itself. The pain is not, however, closely related to the gastric acidity.

Hardy [2] showed that the administration of hydrochloric acid to ulcer patients, as was suggested as a diagnostic test, gave a variable pain response, often causing no pain and, vice versa, sometimes causing pain though no ulcer was present. The relief of pain following diet or alkalis is probably largely independent of the gastric acidity. I have found, for instance, in ulcer patients that an egg and milk feed with subsequent withdrawal of the stomach contents has revealed almost as high an acidity as that found after giving a strong caffeine test-meal. The two following cases show this clearly. In the first a penetrating ulcer of the lesser curvature was present, and shown without question by X rays. In the second there was a duodenal ulcer.

CASE 1. (*Gastric ulcer.*)

	Free acid. c.cm. N/10 NaOH.	Total acidity. c.cm. N/10 NaOH.	Total chlorides as g. HCl per cent.
Stomach acidity at 1 hr. after—			
(*a*) Caffeine test-meal	34	50	0·320
(*b*) Lenharz feed (℥ vi egg and milk)	25	75	0·380

CASE 2. (*Duodenal ulcer.*)

	Free acid.	Total acidity.	Total chlorides as g. HCl per cent.
Stomach acidity after			
(*a*) Caffeine test-meal (1 hour)	30	48	0·190
(*b*) Lenharz feed (1 hour)	44	90	0·430
(*c*) Lenharz feed (3 hours)	38	64	0·380

It is also certain, as J. F. Venables[7] and A. F. Hurst have shown, that gastric acidity may be higher after the cure of an ulcer by diet and alkalis, when all symptoms have gone, than before treatment when an active ulcer was present. Such terms as hyper- or hypo-acidity can therefore have no real meaning as definite diagnoses of "indigestion." They can be merely variations in function which may often have no relation to the symptomatology. The gastric acid is apt to be blamed for almost all types of indigestion, but chemical analyses of test-meal results can never alone afford a complete diagnosis, and have relatively little value except as confirmatory in duodenal ulcer, carcinoma of the stomach, pernicious anæmia, and gastritis. I am confident that the majority of cases of gastric hypersecretion characterised by pain late after meals—sometimes described as Reichmann's disease—are in fact due to pyloric gastritis, duodenitis, or very often to an actual ulcer.

Just as the highest gastric acidity may be present without symptoms, so may complete absence of hydrochloric acid lead to no indigestion whatever, as is well known. The following case illustrates this well.

The patient was a man of 47, who for 18 months had complained of fatigue, loss of weight, and anorexia, but of no digestive or other symptoms whatever. In view of the anorexia and loss of weight, a radiogram of the alimentary tract had been made, but had shown no abnormality. The stools had also been examined, and a large excess of muscle-fibres found, some eight months previously. Pancreatic insufficiency was suspected, but there had been no improvement with treatment by pancreatin. I thought that the creatorrhœa might be due to a peptic deficiency in the stomach and carried out a test-meal which showed complete achlorhydria and almost total lack of pepsin. Further examination of the blood showed the case to be one of pernicious anæmia, and complete cure resulted with liver treatment and hydrochloric acid. In this case, therefore, there must have been complete failure of gastric digestion—but with normal peristalsis and tone as shown by the barium meal—for many months without any digestive symptoms (except loss of appetite).

Again, typical ulcer pain may be produced by purely mechanical motor irregularities, as is shown by the following case. The patient came to the out-patient department with a story of two and a lf years' "indigestion" in intermittent attacks, using epigastric pain one half to one hour after eals with vomiting which eased the pain, and mporary relief from sodium bicarbonate. Her mptoms were due to a large cystic tumour of the ft kidney deforming the stomach and entirely isappeared when this was removed; they have not curred.

Ulcer pain may persist in spite of apparently areful dieting by the patient himself. On the ther hand, such dieting is usually quite inefficient. rough rule, and one that is of real assistance in iagnosis, is that *pain which is not relieved by two-ourly feeds of egg and milk is almost certainly not due uncomplicated ulcer.* The patient is put to bed or 24 hours and given 5 oz. feeds, every two hours y day and every three hours by night, of the following nixture, which is easily made at home:—

Milk ..	..	2 pints.	Eggs	.. ..	4
Water	..	½ pint.	Sugar	.. ..	℥ii

Almost every case of ulcer is relieved of pain almost mmediately—even when quite considerable pyloric bstruction may be present. The vomiting of ulcer is lso frequently stopped as if by magic. If the pain emains unaltered its cause is either other than ulcer r there is some definite complication, such as dhesions or chronic perforation. In the great majority of cases the patient will be entirely free of symptoms in 24 hours.

The frequency of the feeds rather than their exact composition is probably the most important factor. If there is no change in the pain it is probably due to some non-gastric cause such as chronic appendicitis, colitis, or cholecystitis. With carcinoma of the stomach the pain may persist in spite of this diet, but often it is relieved, which is perhaps unfortunate from the point of view of diagnosis. The following cases illustrates this point

A man, aged 47. Periodic attacks of epigastric pain, about half an hour after food, for nine years. No vomiting. Radiological examination showed a six-hour residue in the stomach with an ulcer almost certainly present on the lesser curvature. Occult blood was present in the stools. He was entirely relieved of symptoms by ulcer diet alone and remained free for four months. Then a return of pain about two hours after meals occurred, even with the diet, and Mr. Z. Cope kindly saw him and explored the abdomen. An inflamed appendix with concretions was found but no ulcer in stomach or duodenum. In view of the X ray and the blood in the stools, I think there can be no doubt that an ulcer had been present on the first occasion and had been cured, whilst the appendix had been entirely quiescent. On the second occasion the appendix had been causing the symptoms (which were somewhat different from those of the previous attacks).

Examination.

It is rare to find a wholly negative result if ulcer is present, even in its quiescent stage. There is almost always a definitely localised point of tenderness on deep pressure, and this point is generally painful on pressure even between the attacks and is often of no greater size than a shilling. Its discovery is a most important piece of evidence. It should be sought by pressure with one finger-tip with equal firmness area by area. Mid-line tenderness is less significant than tenderness to the side, but the site varies considerably, corresponding almost certainly to the ulcer itself, as Morley[3] and others have shown by marking it with a lead circle and radiographing the stomach with a barium meal. The mechanism of its production is a subject of extreme interest, but it is probably caused by peritoneal pressure over the ulcer area. Clinically it is well to define this point precisely when it is found and to mark it with a pencil and check it later on in the examination and, if possible, on one or two subsequent occasions. If due to ulcer it will be found to remain constantly in the same spot, but to sink perhaps an inch downwards in changing from the horizontal to the vertical position. Unlike gall-bladder tenderness it does not move with respiration. This tender spot is of the greatest possible significance in the diagnosis of ulcer, even when history or other evidence is inconclusive. It may be associated with the small area of hyperæsthesia at the back, close to the spine at about the tenth, eleventh, or twelfth ribs on the right side, but reflex bands of hyperæsthesia are very seldom found with ulcer. Mid-line tenderness is often due to pressure over the aorta, and diffuse tenderness in the epigastrium, not localised particularly to one small site, is far less suggestive, and may be present with gastritis or colitis.

Even with the most careful history and clinical examination, it is not always possible to differentiate certainly between ulcer, growth, and cholecystitis or chronic appendicitis. X ray examination will show an ulcer in at least 90 per cent. of cases, and chronic gall-bladder disease in perhaps three-quarters of the cases; a barium meal and enema may afford useful confirmatory evidence of chronic appendicitis; a test-meal can assist in differentiating duodenal ulcer from a chronic atrophic gastritis, and a biliary drainage can help to elucidate gall-bladder disease.

GASTRITIS.

It is, as a rule, only wise to diagnose gastritis, whether primary or secondary to neurosis, after the most thorough process of exclusion. We find, however, by such methods that it is far more frequent than is sometimes believed. In fact, it is probably very common. This has been more clearly shown since the wider use of gastroscopy, and may be still further demonstrated by gastro-photography. In England we, like Sauerbruch, are apt to regard gastroscopy as more dangerous than an exploratory laparotomy, but on the Continent valuable knowledge has been gained by its use, and many writers—like Henning[4] record results in 500 or more cases without ill-effects.

Thus we know, for instance, that gastro-enterostomy is very frequently followed by gastritis, probably due to the regurgitation of bile and intestinal juices into the stomach, which is a commoner cause of persistence of gastric symptoms after this operation than are the adhesions which are more generally diagnosed. Gastritis is almost constant with ulcer and with carcinoma, and follows the use of many chemical substances—e.g., alcohol. Long use of drugs such as digitalis, bromides, and aspirin also produces gastritis.

In general, gastritis is of two types, though it must be admitted that the clinical symptoms and the anatomical changes do not always run parallel. These types may be called the hypertrophic and the atrophic, though the latter may often follow the former. They correspond approximately to the types of hypersthenic and asthenic, or—in terms of secretion only—of hyperacid and hypoacid, though secretion curves do not correspond exactly to the anatomical changes. In the former the mucous membrane is engorged and swollen, often with multiple small erosions and sometimes actually polypoid overgrowths. In the latter the mucous membrane is thin and pale; in both a large amount of mucus is apt to be present.

It is possible that the treatment of gastritis is in some measure a preventive treatment of both ulcer and carcinoma, for an associated gastritis is almost always found. Some workers even regard ulcer as a "complication" of gastritis, and I feel sure that duodenitis without actual ulcer is common. It is most often due to chemical irritation, rather than actual bacteria, although in a number of suspicious cases I have found an abnormal growth of organisms in the duodenal content which, in health, is usually sterile. The gastritis accompanying ulcer is usually situated mainly at the pylorus and often shows small polyps with superficial erosions; the gastritis of congestive heart failure is generalised and shows a very great excess of mucus. Atrophic gastritis is in general less productive of local symptoms than the hypertrophic type.

Alcohol tends at first to cause a hypertrophic gastritis and later an atrophic or "anacid" type.

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Again, typical ulcer pain may be produced by purely mechanical motor irregularities, as is shown by the following case. The patient came to the out-patient department with a story of two and a

Tobacco is definitely stimulative to gastric secretion and in some cases appears to excite peristalsis. Gray [6] carried out some experiments on the effects of smoking before a barium meal and before and during a test-meal in 50 cases of duodenal ulcer, and found both an increased acidity and increased peristalsis when tobacco was taken on a fasting stomach. Other experiments have also shown the same effect. Tobacco chewing is a powerful gastric stimulus and can indeed lead to a definite gastritis. I think in a few cases nicotine is a cause of irregular motor activity and spasm in the colon also, so that attacks sometimes described as "abdominal angina" may be produced, as may perhaps (though rarely) pyloric spasm as well. It has unfortunately been shown that the so-called nicotine-free cigarettes or those with varying types of filter have no less nicotine in their smoke than other cigarettes and are therefore probably no less stimulant than others.

Alcohol has important actions upon digestion. Many ulcer patients notice that they are afforded temporary relief by brandy whereas more dilute alcoholic drinks upset them very much. This is due to the fact that a concentration of alcohol in the stomach greater than about 15 per cent. usually causes almost a temporary paralysis with diminution of peristalsis and tone and a checking of secretion. Lesser concentrations have a markedly stimulant action upon both peristalsis and acidity. Undiluted brandy as a treatment for peristaltic unrest is therefore not very different from the mixture which is generally called mist. carminativa, made up of spir. chloroform, spir. cajuput, and the like. These contain about 90 per cent. of alcohol, and the spir. æth. nitrosi is a most convenient way of prescribing alcohol when there are prejudices against ordering it as such.

Tea and coffee are fairly powerful excitants of gastric secretion. A cup of strong coffee contains between one and two grains of caffeine and causes a copious secretion of gastric juice, but weak China tea with milk has a far less stimulant effect. Again, it is disappointing to find that the so-called caffeine-free preparations of coffee show little difference in this activity. Food taken with tea appears experimentally to be less well digested than when taken without.

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5. Roberts, W. M.: Quart. Jour. Med., 1931, xxiv., 133.
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Vacancies

For further information refer to the advertisement columns.

Atrincham General Hospital.—Jun. H.S. At rate of £120.

Aylesbury, Royal Buckinghamshire Hospital.—Res. M.O. At rate of £200.

Barry U.D.C. Surgical Hospital.—H.S. £200.

Beckenham, Kent, Bethlem Hospital, Monk's Orchard, Eden Park. Res. H.P. At rate of £200.

Birmingham, Dudley-road Hospital.—Gynæcologist and Obstetrician. £750. Also Jun. Asst. Res. M.O.'s. At rate of £200.

Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.

Blackburn Royal Infirmary.—Res. H.P. and 4th H.S. £175 and £150 respectively.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Brighton, Hove and Preston Dispensary and Hove Hospital, Sackville-road.—Hon. Physician.

Brighton, Royal Alexander Hospital for Sick Children.—H.P. £100.

Brighton, Steyning Institution.—Asst. M.O. £250.

Bristol Eye Dispensary.—Hon. Ophth. Surgeon.

British Hospital for Functional Mental and Nervous Disorders, 72, Camden-road, N.W.—Hon. Physician.

Burton-on-Trent, General Infirmary.—Cas. O. and H.P. £150.

Cancer [illegible] *-road, S.W.*—H.S. At rate of £100.

[illegible] *Hospital.*—H.P. At rate of £130.

[illegible] *anterbury Hospital.*—H.P. At rate of £125.

Chester, East Lanchashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—H.S. At rate of £100.

Derby, Derbyshire Hospital for Sick Children.—Res. H.S. At rate of £130.

Derby, Derbyshire Royal Infirmary.—H.S. for General Surgery. £150.

Dover Borough.—Asst. M.O.H. £650.

Durham County Hospital.—Two H.S.'s. Each £150.

Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. At rate of £150.

Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.—Pathologist. £300.

Evelina Hospital for Sick Children, Southwark, S.E.—Hon. Physician to Out-patients. Also Cas. and Out-patient Officer. At rate of £120.

Exeter, Devon County Council.—School Medical Inspector. £500.

Halifax Royal Infirmary.—Third H.S. At rate of £150.

Harrogate Infirmary.—Jun. H.S. At rate of £140.

Hastings, Royal East Sussex Hospital.—Jun. H.S. At rate of £100.

Hospital for Consumption and Diseases of the Chest, Brompton. S.W.—H.P. At rate of £50.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively. Also Med. Reg. £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Secretary. £750.

Ilford, King George Hospital.—H.S. At rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Johannesburg Hospital, South Africa.—Radiologist. £1500.

Kidderminster and District General Hospital.—H.S. £150.

Lancaster Royal Infirmary.—Sen. and Jun. Res. H.S.'s. £175 and £130 respectively.

Leeds, Jewish Herzl Moser Hospital, Leopold-street.—R.M.O. £200.

Liverpool, Smithdown-road Hospital.—Res. Asst. M.O.'s. £200.

London Clinic and Nursing Home, Ltd., 20, Devonshire-place, W. Res. H.S. At rate of £200.

London University.—University Chair of Physiology. £1100.

Manchester, Ancoats Hospital.—Med. Reg. for Out-patient Dept.

Manchester, Royal Children's Hospital, Pendlebury.—Res. M.O. At rate of £125.

Manchester, St. Mary's Hospitals.—Three H.S.'s. Each at rate of £50.

Middlesborough, Holgate Municipal Hospital.—Res. H.P. At rate of £170.

Miller General Hospital, Greenwich-road, S.E.—Hon. Asst. Surgeon to Genito-Urinary Department.

Minehead, Somerset, Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.

Newcastle-upon-Tyne, Hospital for Sick Children.—H.P. and Sen. and Jun. H.S.'s. Each at rate of £100.

Northampton General Hospital.—H.S. to Ear, Nose and Throat Dept. At rate of £150.

Oldham Royal Infirmary.—H.S. £175.

Portsmouth, Royal Hospital.—Cas. O. At rate of £100.

Preston, Lancashire County Council.—Asst. County M.O. £800.

Preston, Wrightington Hospital, Parbold.—Jun. Asst. M.O. £200.

Reading, Royal Berkshire Hospital.—H.P., Cas. O. and Res. M.O. Each at rate of £150.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Royal College of Surgeons of England.—Election of Examiners in Anatomy, &c.

Royal Eye Hospital, St. George's Circus, Southwark, S.E.—Sen. and Jun. H.S. At rate of £150 and £100 respectively.

Royal Free Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £150.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70 Also H.P. At rate of £70.

Ryde, Royal Isle of Wight County Hospital.—Hon. Ophth. Surg.

St. John's Hospital, Lewisham, S.E.—Res. Cas. O. At rate of £100.

St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—Res. H.P. At rate of £80.

Salford, Hope Hospital.—Res. M.O. £400.

Salvation Army, Mothers' Hospital, Lower Clapton-road, Clapton, E.—Jun. Res. M.O. At rate of £60.

Sheffield, Jessop Hospital for Women.—Secretary. £450.

Sheffield Royal Hospital.—H.S. and Res. Anæsthetist. Each at rate of £80.

Southport General Infirmary.—Jun. H.S. £150.

Sutton, Surrey, Sutton and Cheam Hospital.—Res. M.O. At rate of £150.

Watford, Herts, Peace Memorial Hospital.—Res. H.S. At rate of £150.

QUEEN'S HOSPITAL, BIRMINGHAM.—The income last year was £45,109, an increase of £3717; the expenditure was £48,425, a decrease, compared with the previous year, of £2637. The debt is £18,598. The full year's income from private paying patients was £2435. Last year there were 5268 in-patients, 13,753 out-patients, and 16,572 casualties, a considerable reduction in the two latter categories. In-patients cost £2 18*s.* 7¼*d.* per week, as compared with £3 1*s.* 2*d.* in the preceding year; the average cost per bed was £152 15*s.* 11*d.*, as against £159 7*s.* 10*d.* in 1930. Each out-patient cost 4*s.* 3½*d.* in place of the former 5*s.* At the beginning of the year arrangements came into force requiring patients to contribute according to their circumstances; the sum thus received from in-patients was £1664, and from out-patients £947. The amount received from the contributory scheme was only 48 per cent. of the cost of its patients. The stock of radium has been increased from 300 to 340 milligrammes, and has been freely used with encouraging results.

The latter is often found also with bad oral sepsis, poor mastication, and old age. It is frequently accompanied by dirty tongue and a bad taste in the mouth; sometimes by anæmia, acne rosacea, urticaria, arthritis, and "dyspeptic" ulcers in the mouth. The appetite is poor, and thirst is often a marked symptom. The condition is apt to be polysymptomatic, and patients often complain of fatigue, lassitude, headache, and insomnia. Any real epigastric pain is rare. I think some of these cases are due to a constitutionally weak stomach which shows peculiar idiosyncrasies to certain articles of food. In some the condition dates from one of the infective fevers or influenza, in which an endogenous or blood-borne gastritis may have occurred and led to deficient motor activity and hyposecretion.

In the hypertrophic or ulcer type, on the other hand, the appetite is usually good, though the patient may be afraid to eat; the tongue is clean, and the symptoms are essentially abdominal or monosymptomatic.

Treatment.

There are two broad lines of treatment: sedative or stimulant, in other words, a therapy directed towards lessening gastric activity or towards increasing it. The first is required for ulcer patients, for acute and subacute gastritis, and as a palliative treatment in the reflex hyperactivity associated (in the early stages at least) with cholecystitis or appendicitis. The latter is of use for long-standing gastritis, of the toxic or atrophic type; in cases where loss of tone and fatigue is a feature, as in convalescence after the toxic gastritis of fevers; in old age; often in the dyspepsia of tuberculosis and in that found commonly in nervous girls which German authors describe well as a "stomach strike."

In the ulcer régime the diet required is not necessarily fluid but non-stimulating, that is, one which calls forth a minimum of motor as well as secretory activity. Not uncommonly, the diet ordered alternates Bovril with Benger's food, their only common feature being that they are both fluid! The following list is not in any way original, or more than an outline of dietetic treatment. The "egg and milk diet" is that mentioned above; it may be used early in treatment but requires variation according to the stage of healing of the ulcer.

SEDATIVE (ULCER) RÉGIME.

2 pints milk.
½ pint water.
4 eggs.
2 teaspoonfuls sugar.

Five-ounce feeds, 2-hourly by day, 3-hourly at night.

Avoid pickles, curry, spices, vinegar; Acid fruits (especially raw); lemon-juice; fruit with pips, e.g., currants, raisins, figs; peel, e.g., in cake or marmalade; nuts; coarse vegetables, e.g., celery, lettuce; strong meat soups, broths, Bovril, or extracts. Tough meat or high game. Strong tea or coffee. All alcoholic spirits; any alcohol on an empty stomach.

Take especially eggs, egg-dishes, milk and milk foods, custards, junket, jellies. Butter, cream, soft puddings. Plain biscuits, cake, toast, rusks—not new bread. Purées of vegetables and sweet fruits. Fish—not very salted. Meat—not more than once a day, preferably rabbit, lamb, chicken, veal.

Do not go longer than 2 to 2½ hours without a feed.

In addition to diet, alkalis, belladonna, and olive oil are all valuable.

Of the *alkalis*, sodium bicarbonate has had some unkind things said about it but still holds a most important place in treatment. Its actions are essentially: (1) to neutralise acid with (2) the liberation of carbon dioxide; (3) to dissolve mucus; (4) to cause a secondary stimulation of gastric juice; (5) to relax muscle spasm; and probably (6) to relax the pylorus and thus increase the rate of emptying of the stomach.

There is fairly definite evidence that sodium bicarbonate relaxes pyloric spasm, and possibly hypertonicity of the stomach in general. On the other hand, the liberation of carbonic acid gas tends to stimulate peristalsis, and so to hasten stomach emptying time. The third and fourth functions of dissolving mucus and stimulating gastric secretion are clearly valuable in cases of gastritis where mucus coats the stomach and hyposecretion is present, in which case it should be given some 30 minutes before food. As a pure neutraliser of acid, sodium bicarbonate is better replaced by calcium carbonate, magnesium or the citrates, as in the powders I use which I call "Pulv. 1333"—containing one part of sodium bicarbonate and three parts each of precipitated calcium carbonate, the light magnesium oxide and oxycarbonate of bismuth.

Atropine is most valuable as a gastric sedative, for it not only lessens secretion and in large doses actually inhibits it but, by acting on the vagus and the nerve plexuses in the wall of the stomach, it also lessens pyloric spasm as well as gastric tone and peristalsis. Radiological evidence upon the inhibitory action of atropine is not wholly conclusive, but its effect on the secretory curves of test-meals is unquestioned. Dryness of the mouth is a sign that some "drying" of the stomach is occurring. Atropine must be given in good dosage: as tr. belladonna, ♏v. to xv., or as atropine sulphate, gr. 1/150 to 1/200 in a drachm of water.

Olive oil is also a very valuable gastric sedative when taken alone, for it powerfully inhibits both the secretory and motor activity of the stomach. This property has been demonstrated experimentally (Roberts [5]), and is in virtue simply of its being a vegetable fat and is not in any sense specific. It must be given alone, since a combination of fat and protein—as for instance fish fried in oil—has a very different effect. The inhibitory effect of olive oil upon stomach activity is produced after its entrance into the duodenum, and since it has a markedly stimulant action upon biliary secretion it is mildly laxative; its high food value in under-nourished patients is particularly valuable. It is best given before meals and last thing at night in tablespoonful doses. If four doses are given in the day an energy value of about 500 calories is obtained—approximately a quarter of that needed for an average individual.

The strong carminative spirits of the pharmacopœia produce a temporary "paralysis" of the stomach, relaxing motor activity, but are followed by an increased secretion and augmented peristalsis. They should be avoided for anything but temporary use in relieving the severe pain of irregular peristalsis, and should never be ordered for prolonged use as gastric sedatives, particularly in ulceration.

"STIMULANT" TREATMENT.

A varied diet may be given, but milk and fatty foods are generally badly taken. Meat extracts, light wine, tea and coffee are all excitant to the stomach and are useful; some such fluid with meals is often helpful.

Sodium bicarbonate is valuable for freeing mucus and causing a reactionary secretion of gastric juice. It should be ordered before meals with a bitter such as inf. gent. co. which tends to stimulate the psychical secretion and activity of the stomach.

Strychnine has been demonstrated to increase the tone and peristalsis of the stomach, and may be given as liq. strych. ♏ii. to v. or the tr. nux vom. ♏v. to xv. It is best given after meals.

Hydrochloric acid is somewhat disappointing when ordered alone but should be tried in full doses; ♏xxx. to lx. of the dilute acid with or after meals; ʒi. of the glycerin of pepsin should be added to correct a possible ferment deficiency. Strychnine or nux vomica may well be added to this mixture, so that some such prescription as the following may be ordered.

℞	Ac. nitro-hydrochlor. dil.	♏xxx.
	Glycerini pepsini	ʒi.
	Tr. nuc. vom.	♏v.
	Inf. gent. co. ad	℥i.

Such a mixture is often efficacious in the treatment of gastritis when the acute stage is past and the sedative régime has been carried on long enough or, as not infrequently happens, too long.

ADDRESSES AND ORIGINAL ARTICLES

THE RÔLE OF THE HÆMOLYTIC STREPTOCOCCI IN INFECTIVE DISEASE.

BY C. C. OKELL, M.C., M.B. CAMB., M.R.C.P. LOND.,
PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY OF LONDON, AND BACTERIOLOGIST TO UNIVERSITY COLLEGE HOSPITAL, LONDON.

II.—PROPERTIES OF ERYTHROGENIC (RASH-PRODUCING) TOXIN OF THE STREPTOCOCCI.*

THE properties of the exotoxin of the hæmolytic streptococci which are responsible for the peculiar features of the scarlatinal exanthem and of the Dick test, are so important from the point of view of modern work on the prophylaxis of scarlet fever that no excuse need be offered for considering them in detail. One of the most remarkable properties of this toxin is that when it is suitably diluted and introduced into the human skin it produces a local erythematous patch which appears within a few hours, reaches a maximum within 24 hours and then rapidly fades away leaving at times a desquamating area but never signs of more severe tissue damage. The consistency and appearance of this local patch of erythema so closely resemble those of an actual area of rash in a subject with scarlet fever, that we readily infer that the mechanism of production in the two cases is identical. If this toxin is injected into susceptible human beings in large doses, for example in quantities upwards of a thousand times the dose used in the Dick test, a clinical condition results which resembles a self-limited attack of scarlet fever so closely that it has been described as "the scarlatinal syndrome" or in O'Brien's graphic phrase "miniature scarlet fever." The syndrome comes on a few hours after the injection. The patient often vomits, develops fever, a frequent pulse, a furred tongue, and a generalised rash which in appearance and distribution is indistinguishable from that of scarlet fever. An interesting symptom recorded by a number of observers is soreness of the throat. As in true scarlet fever the rash avoids the face, and the appearance of circumoral pallor has been recorded. A slight albuminuria is common and there may even be transient hæmaturia. Recovery even from large doses is apparently rapid and complete. Toyoda, Moriwaki, and Futagi[1] have recorded a case of the scarlatinal syndrome in which desquamation followed.

No experimental animal has so far been discovered which may be compared with man in susceptibility to this toxin, and thus we have been denied those methods of study which have yielded such a rich harvest in the study of diphtheria. It is doubtful if an intradermic reaction strictly comparable with the Dick reaction can be obtained in any animal other than man. I have attempted to produce Dick reactions in horses, cows, sheep, goats, dogs, cats, ferrets, rabbits, guinea-pigs, rats, mice, and hens but always ineffectually. Even monkeys, at least those of the *rhesus* family, have, in my experience, no skin susceptibility to doses of toxin a hundred times greater than that used for the Dick test in human beings.

Kirkbride and Wheeler[2] claim to have obtained reactions comparable with Dick reactions on the skin of Saanen goats. Their method has been used on a considerable scale at the New York State Department of Health for purposes of standardising streptococcal toxins and antitoxins. Other workers seem to have had very little fortune in confirming these observations of the Albany workers. This may, of course, be due to a failure to secure properly susceptible goats. My own experiences with such goats as I could procure were entirely disappointing. Certain peculiar skin reactions were observed, but these appeared to be unrelated to the specific toxic reaction of the toxin nor could I obtain any results which were capable of numerical interpretation. Ando states that the skin of white pigs will give a Dick reaction; but some dozen pigs, young and old, which I examined failed to give anything resembling a Dick reaction, even when large amounts of toxin were injected. This, I believe, has been the experience of many other workers who have attempted to confirm Ando's observations.

As Parish and I[3] showed, the rabbit, while it gives no skin reaction, is susceptible to large intravenous doses of erythrogenic toxin. In 96 per cent. of cases the animals died within six days, usually within 48 hours. When, however an, adequate dose of streptococcal antitoxin was previously given 87 per cent. of the rabbits survived for longer than six days. In our earlier experiments it needed 5 c.cm. or more of the strongest toxin we could obtain to cause death in this way. The dose employed was at least 5000 times that required to produce a typical Dick reaction, and 50 times that required to produce a generalised scarlatiniform rash, in a susceptible human subject. Hartley[4] and also Pulvertaft[5] with much smaller volumes of concentrated toxin subsequently obtained similar lethal effects and similar specific neutralisation with antitoxin. Hartley produced death with as small an intravenous dose as 0·2 c.cm. of his highly purified preparations. Pulvertaft describes in some detail the gross and minute anatomical changes found in rabbits dying from intravenous injections of toxin, but it is difficult to say if these are in any way characteristic. I was personally unable to satisfy myself that the gross post-mortem changes which were found in such animals gave any reliable information bearing on the essential toxological properties of streptococcal filtrates. Pulvertaft states that the kidneys of these rabbits showed "degeneration of tubules with great congestion in glomeruli and tubules," and that in rabbits which survived more than five days sections showed "cellular casts in the tubules and evidence of round-celled proliferation around the glomeruli."

It has often been surmised that nephritis, a justly feared sequel of scarlet fever and indeed of all streptococcal infection, can be ascribed to the action of the erythrogenic toxin. It has been mentioned that transient albuminuria and even hæmaturia may follow the injection of the sterile toxin into human beings, but it is to be noted that these symptoms accompany the rash at its height and rapidly disappear with the rash, while the characteristic feature of scarlatinal and streptococcal nephritis generally, is that it makes its appearance after a considerable latent period, often after all the acute manifestations of disease have passed away. Two further points may be referred to suggesting that the erythrogenic toxin is not the cause of nephritis. Nephritis may follow in cases of scarlet fever with very slight rash and cases of streptococcal infection with no signs of rash at all, nor has treatment with streptococcal antitoxin ever been clearly proved to influence the subsequent incidence of nephritis.

A little can be learnt about the properties of the erythrogenic toxin from observations of its effects upon the human skin. The toxin, whether injected

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* The Second Mulroy lecture for 1932, delivered before the Royal College of Physicians of London on Feb. 23rd.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, April 11th.—4.30 P.M., United Services. Annual General Meeting: Election of Officers and Council. Surg.-Commander W. H. Edgar: Scarlet Fever, an Effort in Preventive Medicine.

Tuesday.—8.30 P.M., Psychiatry. Dr. David Forsyth: The Place of Psychology in the Medical Curriculum.

Friday.—5.30 P.M., Physical Medicine. Sir Robert Jones: Manipulation as a Therapeutic Measure. Radiology. There will be no Meeting of the Section on this day. 8 P.M., Physical Medicine and Radiology. 8.15 P.M., Obstetrics and Gynæcology. Short Communications. Mr. D. H. MacLeod: Two Cases of Struma Ovarii. Mr. Victor Bonney: Two Cases of Implantation Endometriomata. Papers: Prof. Leith Murray: Ectopic Gestation as seen by the Gynæcologist; An Analytical Study of 146 Cases. Dr. A. A. Gemmell and Prof. Leith Murray: Two Cases of Simultaneous Intra- and Extra-uterine Pregnancy.

HARVEIAN SOCIETY.

Thursday, April 14th.—4.30 P.M., Clinical Meeting at King's College Hospital.

PADDINGTON MEDICAL SOCIETY.

Tuesday, April 12th.—9 P.M. (at the Great Western Royal Hotel, Paddington, W.), Debate on a State Medical Service, to be opened by Mr. Somerville Hastings and Sir Ernest Graham Little, M.P. Non-members invited.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.

Thursday, April 14th.—8.30 P.M., Dr. H. C. Squires: A Novice's Impressions of the Theory and Practice of Individual Psychology.

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Wandsworth Common.

Wednesday, April 13th.—9 P.M., Mr. C. Rowntree: Common Diseases of the Mouth.

SOCIETY FOR THE STUDY OF INEBRIETY.

Tuesday, April 12th.—4 P.M. (in the Rooms of the Medical Society of London, 11, Chandos-street, W.), Annual Meeting. Dr. J. D. Rolleston will open a discussion on the Cigarette Habit.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

Friday, April 15th.—5 P.M., Dr. R. Fortescue Fox and Dr. G. R. Bruce: The Provision of Medical Baths by Local Authorities.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, April 11th, to Saturday, April 16th.—Queen's Hospital for Children, Hackney-road, E. Post-graduate Course in Diseases of Children. All day.—London Lock Hospital, Dean-street, W. Post-graduate Course in Venereal Disease. Every afternoon. (The above Courses are open only to Members.)—Children's Heart Hospital, West Wickham, Kent. Sat., 10.30 A.M. to 12 no [illegible] y Dr. Berr [illegible] and Hea [illegible] from the [illegible]

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.6.

Monday, April 11th.—10 A.M. to 1 P.M., Gynæcological Ward, Surgical Wards, Genito-Urinary Operations, Skin Department. 2 to 4 P.M., Operations, Surgical Wards. Medical, Surgical, Gynæcological, and Eye Out-patients. 4.15 P.M. (Lecture) Sir Henry Simson: The Management of Pregnancy and Labour.

Tuesday.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Department. 2 P.M. to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Mr. Tyrrell Gray: Visceroptosis in Relation to other Diseases.

Wednesday.—10 A.M. to 1 P.M., Medical Wards, Children's Medical Out-patients, 2 P.M. to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., [illegible]

Thursday.—1 [illegible] Fracture [illegible] Medical, [illegible] patients. 4.15 P.M. (Lecture): Dr. Scott Pinchin: Diseases of the Bronchi.

Friday.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 12 noon, Medical Lecture. 2 P.M. to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Mr. Alex. Roche: Indications f [illegible]

Saturday.—9 A.M. to 1 P.M., Throa [illegible] Wards, Surgical and Children's [illegible] The lectures at 4.15 P.M., on [illegible] Thursdays, and Fridays are ope [illegible] titioners without fee.

LONDON JEWISH HOSPITAL, Stepney Green, E.

Thursday, April 14th.—4.15 P.M. Dr. M. Schwartzman: X Ray Demonstration.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.

Wednesday, April 13th.—3 P.M., Mr. J. A. Andrews: Pre-operative Treatment of Enlarged Prostate.

ST. MARK'S HOSPITAL, City-road, E.C.

Thursday, April 14th.—4.30 P.M., Dr. J. B. Alexander: The Relationship of Tuberculosis to Anal Fistulæ.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL Gray's Inn-road, W.C.

Friday, April 15th.—4 P.M., Mr. A. Ryland: Temporal Bone. (Lantern lecture.)

SALFORD ROYAL HOSPITAL.

Thursday, April 14th.—Dr. A. G. Bryce: Demonstration of Surgical Cases.

ROYAL SAMARITAN HOSPITAL FOR WOMEN, Glasgow.

Wednesday, April 13th.—4.15 P.M., Dr. John Gardner: *Gynæcological Cases.*

ANCOATS HOSPITAL, Manchester.

Thursday, April 14th.—4.15 P.M., Dr. G. J. Langley: Treatment of Cardiac Vomiting.

MANCHESTER ROYAL INFIRMARY.

Tuesday, April 12th.—4.15 P.M., Mr. P. R. Wrigley: Diagnosis and Treatment of Carcinoma of the Colon.

Friday.—4.15 P.M., Mr. A. H. Southam: Demonstration of Surgical Cases.

Appointments

Tame, R. G., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Cranborne District of the County of Dorset.

Births, Marriages, and Deaths

BIRTHS.

Dix.—On April 3rd, 1932, at a nursing home, to the wife o Victor W. Dix, F.R.C.S.—a son.

Montgomery.—On March 29th, at South Park Hill-road, South Croydon, the wife of Stephen K. Montgomery, M.D., of a son.

Nourse.—On April 3rd, the wife of H. E. Nourse, M.R.C.P., of Grange-road, Cambridge, of a son.

MARRIAGES.

Blaikley—Johnson.—On April 2nd, at St. Stephen's Church Guernsey, John Barnard Blaikley, F.R.C.S., to Vivie Maude, younger daughter of Edward Odlum Johnson, O.B.E., I.S.O., formerly of Sierra Leone.

Smith—Fowler.—On April 2nd, at St. Peter's, Eaton-square, George Francis Rawdon Smith, M.D., of Liverpool, to Ethel May Fowler, only child of the late James Stewart Fowler, M.D., of Edinburgh.

Stevenson—Lang.—On March 31st, at Frimley Parish Church, Surrey, Douglas Stuart Stevenson, M.B.E., M.B., Ch.B., to Mary Edith, younger daughter of the late Captain E. L. Lang, Royal Navy, and the late Mrs. Lang, of Craig Bittern, by Dalbeattie.

Stewart—Greenwood.—On April 4th, F. M. Stewart, M.B., Ch.B. Edin., Littlemore, near Oxford, to Susan Helen Greenwood.

DEATHS.

Mooney.—On March 26th, Alexander Patrick Mooney, M.D. J.P., M.B.E., of Preston, Lancs., aged 71.

Nelis.—On March 29th, at The [illegible] Devon William Francis Nelis, M.I [illegible] of the Newport Ment [illegible]

Robertson.—On March 2 [illegible] Edinburgh, George [illegible] F.R.C.P. Edin., F.F [illegible] Psychiatry in the U [illegible] Superintendent of t [illegible] Mental and Nervous Disorders.

Smith.—On March 31st, James Edmund Smith, M.R.C.S. L.R.C.P., of Whitehead's-grove, Chelsea, S.W.

Somerville.—On March 30th, at Harrold, Bedford, Henr Inkerman Somerville, L.R.C.P., M.R.C.S., B.Sc. Lond. aged 76.

Urquhart.—On March 28th, at Cairo, Egypt, Alexander Lewi Urquhart, O.B.E., late Major, R.A.M.C., Professor o Pathology at the University of Cairo.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Fire at a Hospital.—Fire broke out last wee in a ward of the Infectious Diseases Hospital at Oxford. Th ward had been redecorated, and shortly after fires had bee lighted and three patients moved in beams near a chimne were found to be on fire. The flames spread rapidly, bu the patients were safely removed, and the fire brigad speedily put an end to the outbreak. A few of the helper were slightly injured.

we only found the Dick reaction with 1/2000 greater than that with 1/4000 in 72 per cent. of a large group of individuals. We were thus only able to distinguish a toxin dilution from one twice its strength or half its strength on a strictly statistical basis. On a few subjects the chance of a correct comparison was little better than 1 in 2.

Nor does any alternative method of titration present itself which gives greater accuracy. Whether we compare toxins on normal individuals, early cases of scarlet fever, scarlet fever convalescents, or by intravenous injection of the rabbit, whether we assess the values by comparison of individual Dick reactions on the same patient or on different patients, or whether we rely on comparisons of the Dick-positive rate of a large group of individuals, normal or convalescent, we have not been able in our own work to do more than distinguish a toxin amount x from an amount $2x$.

Similarly, in an investigation into the limits of accuracy of the titration of streptococcal antitoxin we were unable by skin neutralisation tests, Schultz-Charlton tests, or passive immunity results on human beings, or by the rabbit method, to do more than distinguish an antitoxin amount x from one $2x$. Compare this with the beautiful precision achieved in titrating the analogous diphtherial product, in which 1/20 differences of antitoxin strength can be readily detected by intradermic tests on guinea-pigs and the presence of so small a quantity as 1–20,000 unit of antitoxin in a 0·1 c.cm. volume be detected (Glenny) under good experimental conditions.

The failure to discover a metrical method providing a degree of accuracy adequate for the purposes of investigation and the confusion that has resulted therefrom illustrate only too well the truth of Clerk Maxwell's remark that "the most important step in the progress of every science is the measurement of quantities." It is this failure in quantitative methods, combined with a very prevalent lack of appreciation of the serious nature of the impasse reached, which has perhaps more than anything else kept our knowledge of the Dick test in relationship to human immunity so confused and unsatisfactory. It must be recognised that to the present moment it has proved impossible to match two successive batches of toxin for the Dick test so closely that they will give approximately the same results on a large series of human beings. It is fortunate that in Great Britain nearly all the routine tests recorded since the test was introduced in 1924 have been done with one batch of toxin which has been under constant supervision as regards stability and other properties. This means that in England at least, the Dick tests which are recorded are numerically comparable. But it is difficult to link up the work done elsewhere with that done in our own country, and much of the experience accumulated on the Dick test is thus not negotiable between nation and nation nor in many cases between individual and individual.

FURTHER DIFFICULTIES.

In addition to the difficulties and uncertainties of the test which depend upon difficulties of titration of toxin and antitoxin, there are other directions in which the Dick test falls short of the Schick test as a weapon in the control of disease. It must be admitted that many careful observers have met with scarlet fever in clearly Dick-negative individuals. Cases of this kind, in which the prediction of immunity as judged by skin-test observations is falsified, occur of course also in connexion with diphtheria, but so far as one can say very much less frequently. On the other hand the presence of a Dick-positive reaction does not appear to be a clear indication of susceptibility to scarlet fever. It is true that those obviously immune to the disease, such as the more seasoned physicians and nursing attendants at fever hospitals, are almost invariably Dick-negative whether they are known to have had scarlet fever or not, but as we pointed out some years ago,[13] a large proportion of persons who have had a history of scarlet fever in early life are still positive to the Dick test read in the ordinary way (13, or 65 per cent. in one group of 20). In some cases the reaction shows a diminution in size but in others it is frankly positive. Yet clinical experience indicates how rarely scarlet fever is met with in persons with a history of previous infection and one can hardly suppose that more than a fraction of these Dick-positive persons would in reality contract the disease if exposed to it.

Most observers have failed to record anything approaching a hundred per cent. Dick-positive rate during the first one or two days of the disease, and we cannot explain this away by assuming that patients may change from a positive to a negative reaction in this time. All our knowledge suggests that a distinctly longer interval must elapse before we can expect the development of immunity to show itself in cases of scarlet fever.

One also meets with an unexpected number of Dick-positive individuals during convalescence from scarlet fever even when there is little doubt as to the correctness of the diagnosis. It one series of 119 cases we found as many as 22 Dick-positive between the third and the twelfth week after onset, 12 being apparently fully positive. In 14 at least out of the 22 cases no reason whatever could be found to doubt the clinical diagnosis.

That patients may pass through a definite attack of scarlet fever yet remain Dick-positive may have a bearing on the subject of relapses. One at least of those mentioned who had passed through a clinically definite attack and had remained Dick-positive developed a second and typical attack a day after the Dick test had been read. The alternative explanation of relapses—that they are due to a second invasion with a streptococcus of a different agglutination group from the first—is inadmissible since, as I have already pointed out, there is no evidence that the different serological groups of streptococci produce more than one erythrogenic toxin, and if a negative Dick test is in reality a useful indication of true immunity there is no reason against inferring that a Dick-negative convalescent should not be as immune to the new as to the original invader. Apart from other evidence, the rareness of second attacks of scarlet fever supports strongly the view that the erythrogenic toxins of the streptococci obtained from cases of the disease are identical.

These points illustrate, I think, sufficiently clearly the intrinsic difficulty of estimating the value of the Dick test as a practical measure in preventive medicine. To say that the discrepancies that one meets with depend upon a bad choice of the test dose of toxin simply emphasises the fundamental difficulty caused by there being no true standard of measurement in these matters; one observer can only argue with another when both have used the same toxin in the same dilution. Even then the discrepancies remain.

PSEUDO-REACTIONS.

Ando and Kurauchi[14] and Toyoda have attempted to account for the admitted difficulties in Dick-testing by suggesting that an adventitious nucleoprotein derived from the bacterial bodies is present in the crude erythrogenic toxin and that discrepancies may disappear if a purified toxin is used. They intradermically as in the Dick test or pricked into the skin as in Lewis's[6, 7] technique, produces in susceptible persons a patch of bright scarlatiniform erythema. Serious damage of the skin does not take place even when very large doses are injected. Large doses may produce extensive areas of reaction and even a more intense erythema, but, except for occasional minute petechiæ which seem to be due to the bursting of over-distended vessels, nothing resembling a tissue necrosis is to be observed. It is not in fact a pyogenic toxin.

Little can be said of the nature of the erythematous reaction. It is at least different from the reaction to trauma or to the histamine-like effect described fully by Thomas Lewis. It is perhaps most analogous with the delayed erythematous reaction produced by exposure to a moderate dose of light as has been described by Lewis and Grant. We do not in fact know whether or not the cutaneous manifestations are in the main due to a direct action of the toxin on the vessels or indirectly through the nervous system.

A SINGLE ERYTHROGENIC TOXIN ?

A majority of hæmolytic streptococci from acute human disease produce one and the same erythrogenic toxin ; this conclusion follows from the observations on human beings by McLachlan,[8] J. Smith,[9] Kirkbride and Wheeler,[10] Toyoda[1] and his colleagues and ourselves. It also obtains support from experiments on animals. Not only do hæmolytic streptococci from diverse forms of disease produce a similar septicæmia in rabbits but so far as Parish and I[3] could ascertain the lethal effect of different streptococci introduced intravenously could be specifically modified by the use of antitoxin prepared against filtrates from puerperal fever, erysipelas, and cellulitis, as well as scarlet fever strains. We recorded similar cross-neutralisation using filtrates (toxins) for the intravenous injection.

It would take too long to review in full the evidence in favour of there being one type of erythrogenic toxin among the hæmolytic streptococci. Some of the claims made in favour of a plurality of toxins are based on quantitative differences in effects and as I shall endeavour to show later, quantitative ideas must be applied to the study of this type of toxin with a due appreciation of their limitations. The immunological identification of toxins is, however, a sufficiently precise science and it seems to me a reasonable attitude to be chary of mere statements on the subject. If there are in fact other streptococcal toxins it should be possible to hand them over in bottles for impartial study. A toxin which cannot stand this acid test hardly calls for recognition.

From this general statement we may have possibly to exclude the hæmolytic *Streptococcus epidemicus* which has of late been found repeatedly in connexion with milk-borne epidemics of sore-throat, particularly in America. Except in its greater tendency to produce capsulated forms this streptococcus differs little from the typical pyogenic streptococci, of which it may be merely a colony variant, but Pilot and Dreyer[11] have recently claimed that it forms an erythrogenic toxin similar in toxic properties to that of scarlet fever strains but immunologically distinct from it. Nor is it improbable that with the advance of research further erythrogenic toxins with special immunological features will be separated out from streptococci. But so far as current knowledge goes, with the possible exception of the case of *S. epidemicus*, it may be stated that only one immunologically distinct erythrogenic toxin has been identified in connexion with the hæmolytic streptococci.† In my experience very few strains of hæmolytic streptococci, whatever their source, are met with that fail to produce this toxin to a greater or less extent under laboratory conditions. It seems to be the rule that strains from scarlet fever produce the toxin much more actively than strains from ordinary streptococcal conditions without rash, but to this rule there are many exceptions. Strains from typical scarlet fever are sufficiently commonly found that produce toxin poorly in the laboratory and I have met with strains from ordinary streptococcal angina and from erysipelas which have in-vitro toxigenic powers comparable to typical scarlet fever strains.

The production of the erythrogenic exotoxin appears to be a direct function of the growth and multiplication of the streptococci. Observations made by Watson and myself in 1924 (unpublished) indicate that the curve of toxin production shown by Dochez's streptococcus follows closely the curve of growth of the cocci during the logarithmic phase. On Hartley and Watson's modification of Douglas's trypsinised broth, maximum growth was reached within 16 to 24 hours, by which time a maximum of toxin is reached. If the pH of the broth at the time of inoculation is pH8 at the end of the growth phase it reaches pH5 to 6 and thus the pH change can be used for judging the best time to harvest the toxin.

Immunological Properties of the Erythrogenic Toxin.

It is no exaggeration to say that the discovery by G. F. and G. H. Dick in 1924 of a skin test which was closely correlated with immunity to scarlet fever inaugurated a new era in the study of streptococcal disease. The new test looked as if it would at once emulate the Schick test in its theoretical interest and in its practical application. The codified knowledge which had accumulated in connexion with the Schick test seemed to be immediately applicable to the Dick test. These hopes have been, however, to a large extent disappointed. Difficulties, both practical and theoretical, were almost at once met with which indicated that our understanding of this test and its application was on a much more insecure basis than our understanding of the analogous Schick test. This unsatisfactory position is, to a great extent, due to the absence of a suitable experimental animal for the purposes of laboratory investigation. To an almost equal extent it is due to certain peculiar features of the erythrogenic toxin. The contribution of the Schick test to the elucidation of the immunological problems of diphtheria is due to the fact that the test lends itself to quantitative study. Its value in this respect depends in turn on the great precision with which diphtheria toxin and antitoxin can be measured on small laboratory animals. By Römer's intradermal technique as perfected by Glenny[12] it is possible to detect as small a quantity of diphtheria toxin as one-thousandth of the minimum lethal dose (M.L.D.) for a guinea-pig and toxins can be compared with a percentage error of about 5 per cent. Now it has proved impossible to measure streptococcal toxin in the same manner even in susceptible human patients.

If, for example, one attempts to compare the effects of a toxin dilution of a certain strength with those of a dilution a quarter of that strength, extremely discordant results may be obtained if only a small number of susceptible subjects are used. Parish and I found that using 0·2 *c.cm.* of two dilutions of one toxin (1/2000 and 1/4000) in the Dick test sitiveness was proved not to be due to the presence antitoxin derived from the mother for not only d many Dick-positive mothers children who were ck-negative, but the Dick-negative children had no tectable antitoxin in their blood. As the child ows older, skin-sensitiveness to the toxin gradually velops, so that at the end of the first year of life arly all children have become sensitive and give positive Dick reaction. Cooke connects the development of sensitiveness with the common presence of emolytic streptococci in the respiratory passages of fants.

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† Williams and Gurley (Jour. Bact., 1932 xxiii 241) have,

In support of this view he states that infants more or less olated from each other developed sensitiveness more slowly an those grouped together in residential institutions. In a oup of 100 children under ordinary domestic conditions ly one was found to harbour hæmolytic streptococci, while a group of 100 who were in a foundling home 64 harboured ch streptococci. Sensitiveness to toxin was found to evelop earlier and more markedly in the latter group.

e also claims that in one instance an insensitive hild was made sensitive by the injection of serum rom a very sensitive person, in other words, the ensitiveness could be passively acquired. These bservations Cooke has used to support the theory hat the acquisition of sensitiveness to streptococcal oxin is an anaphylactic type of phenomenon, theory which from time to time has had many dherents in the past and is indeed a component n the outlook of many modern workers on scarlet ever.

Dochez and Sherman,[20] on the basis partly of human bservation and partly on animal experiments, come to very much the same view. They found that while guinea-pigs are normally insensitive to intracutaneous injections of filtrates from toxigenic streptococci, the animals could to some extent be made sensitive by previous injection with cultures and filtrates. They have even described a generalised erythema following the injection of a sensitised guinea-pig.

In our own experiments we were quite unsuccessful in sensitising guinea-pigs and rabbits to toxin as such. It was comparatively easy to reproduce Dochez and Sherman's phenomenon in guinea-pigs, but we found that in "sensitised" animals, skin reactions could be elicited not only by the injection of active scarlatinal toxin but also with filtrates heated to 100° C. for three hours, an exposure which we have found destroys all potency in a toxin as judged by reactions in Dick-positive human beings. Nor could these reactions be prevented by mixing the toxin with potent antitoxin. The sensitisation was evidently against some streptococcal protein not against the toxin as such. Mackie and McLachlan[21] have come to a similar conclusion as to the nature of the Dochez-Sherman phenomenon.

The so-called anaphylactic or "allergic" conception of scarlet fever has to my mind little to recommend it. The phenomenon presented by scarlet fever has no sufficiently close resemblance to properly defined anaphylactic reactions or to such peculiar reactions as the tuberculin reaction to provide a basis for a useful analogy. Allergy is a term used too often in ætiological arguments to give a touch of mystification to ignorance. So far as current knowledge goes we cannot readily identify "immunisation" with "desensitisation," nor anaphylactic antibodies with antitoxins.

The skin insusceptibility of infants to streptococcal toxin is by no means an isolated phenomenon in the immunology of toxins. It is for example well known that a majority of children under six months of age are Schick-negative and that only between the ages of 4 to 8 months do they become susceptible to the Schick dose of toxin. This has been ascribed to the passive transference of diphtheria antitoxin from mother to child via the placenta, which is known to take place from the work of Gröer and Kassowitz.[22] The explanation of the rather long duration of the passive immunity thus conferred was that the antitoxin was in the form of homologous or maternal protein and would be much longer retained than it would have been had it been conferred in the form of a heterologous protein such as antitoxin derived from the horse. It is true that passive immunity is conferred to the child by those mothers who have antitoxin in their blood, but it by no means follows that such small quantities of antitoxin as are found in new-born children would last sufficiently long to account for the large number of children in the third and fourth month who are still Schick-negative. Glenny, Maizells, and myself have recently taken up the investigation of this subject and we have found that out of 37 children between the ages of 3 weeks and 6 months only two were Schick-positive, 29 out of the 35 Schick-negative children had less than 1/500 unit of antitoxin per c.cm. of blood and 21 had 1/1000 unit or less. The failure of small children to react to the Schick test is not therefore necessarily associated with the presence of circulating antitoxin. The problem of insusceptibility of infants to the Dick test has thus its parallel in the Schick test. We have not yet data which allow us to decide whether or not this non-reactivity of the skin is associated with a general insusceptibility to the toxin, but epidemiological experience strongly suggests that very small children show a remarkable immunity to both diphtherial and scarlatinal infection. If this is really so it is a strange provision of nature that after birth we actually *develop* a susceptibility to diphtheria and scarlet fever. It would be premature to attempt to explain how children acquire sensitiveness to bacteria in this way. Hæmolytic streptococci are certainly sufficiently widespread that their presence could be invoked to explain a specifically acquired sensitiveness to them and their toxin, but our experience does not allow us to admit that toxigenic diphtheria bacilli are similarly ubiquitous and could account for the universal acquirement of sensitiveness to diphtheria toxin during those first and usually sheltered months of infant life.

In this connexion I might refer to some observations of Parish and myself[23] on streptococcal infections in rabbits. We found that young rabbits are significantly less sensitive to intravenous injections of living hæmolytic streptococci and also to their toxic filtrates than rabbits of greater age, and we were unable to increase their sensitiveness by artificial methods.

The problem of the acquirement of susceptibility to certain infecting agents and their toxins is a very interesting one and calls for more thorough investigation, but lightly to accept explanations of scarlet fever on the ground of "allergy" would be to constitute an ill-advised revolutionary change in our immunological ideas. It is perhaps simpler to restate the problem in Erhlich's terms and consider that at an early stage of life certain "receptors" have not yet been developed; this is not only indicated by the fact that the cells cannot be poisoned but also, if we accept Grasset's[24] observations on the failure of chicks in the egg to develop antibodies to diphtheria toxoid, by their lack of antigenic response as well.

Desquamation.

Before leaving the subject of the erythrogenic toxin of the streptococci there is one problem which is, I think, worth referring to. It is a time-honoured clinical custom to accept the appearance of desquamation as clinching the diagnosis in a difficult case of scarlet fever. I have already mentioned that Toyoda records desquamation as following an overdose of the sterile erythrogenic toxin of the streptococcus and indeed it is difficult to avoid the would, in fact, ascribe much of the difficulty to the occurrence of "pseudo-reactions." The importance of pseudo-reactions in interpreting the findings of the Dick test seems to be exaggerated by Ando. The toxins which have been extensively used in recent years only give rise to pseudo-reactions, in the dilution used, in very exceptional cases. In many hundreds of consecutive Dick tests I have failed to meet with any reaction that I could ascribe to the "heat stable" substances to which Ando applies the rather misleading term "endotoxin." That this is common experience is indicated by the fact that many workers have given up the use of a control injection in practical routine.

Compared with the exotoxins of the diphtheria, tetanus, and gas-gangrene bacilli the erythrogenic toxin of the hæmolytic streptococcus is a remarkably stable reagent. Its keeping properties and its stability to heat are so superior to those of the classical toxins that it has often been suggested that it should not lightly be classed with them. Dilutions of a toxin in saline are practically uninfluenced by heating for ten minutes at 75° C., an exposure which almost always completely inactivates diluted diphtheria toxin. It is now generally recognised that in order to destroy all the toxin in a 1/1000 dilution of a typical active filtrate it is necessary to heat it for at least two hours at 95–100° C., an exposure which of course makes it difficult to assess the significance of pseudo-reactions, since any coagulable protein must be severely damaged by such treatment.

While the stability of the toxin has been a very helpful property in the issue of materials for the Dick test, in one direction it has caused difficulty. In the method of active immunisation against scarlet fever by means of the toxin we have to face the fact that to protect children against a disease which at the present time causes little terror we have to employ a troublesome and often disturbing method of immunisation. To avoid all untoward effects of immunisation it is necessary to advance slowly and cautiously from dose to dose of toxin. If, on the other hand, a rapid immunity is required from a practical number of injections it appears impossible to avoid a certain percentage of local and systemic reactions and, speaking generally, the results have not been considered by most hygienists to be worth the cost. There is in fact no comparison between diphtheria and scarlet fever prophylaxis in the ease and safety of the immunising process or the certainty of the practical result.

A SCARLET FEVER TOXOID ?

Much of the confidence which has been put in the safety of immunisation against diphtheria in recent years comes from the use of toxoid in one form or another as the prophylactic agent, and the question arises whether a similar modification of scarlet fever toxin exists. By a toxoid we mean a derivative of a toxin which, while it preserves the specific antigenicity and combining power of the original toxin, lacks its toxic properties. Ehrlich recognised the existence of material with such properties in aged toxins, but the discovery of Löwenstein that the classical exotoxins could be simply converted into toxoid by exposure to formalin made it possible to control the production of toxoid at will. Ramon's discovery of an in-vitro method of measuring toxoid (and thus indirectly antigenic power) made it still further possible to extend the use of toxoid in practical immunisation against the common exotoxins.

It is unnecessary to say that following the introduction of toxin immunisation against scarlet fever, efforts were made by many workers to produce a formol-toxoid from the active toxin. It was found that the remarkable stability of the toxin against heat was paralleled by its stability when treated with formalin. When 0·3 per cent. formalin, the amount usually used for "toxoiding" diphtheria toxin, was added to the streptococcal toxin, little change was noted even when kept for many weeks at 37° C. By increasing the amount of formalin to 0·5 per cent. or more and keeping for several weeks, a considerable loss of toxicity took place.

It is doubtful if any formal proof exists that a change from streptococcal toxin to toxoid takes place under these conditions of detoxication, and so far as I can ascertain immunisation has never been obtained by such material unless at least 1/100 of the original toxic activity is retained.

Veldee[15] obtained a 96·9 per cent. Dick-negative rate when immunising Dick-positive adults and children with a formalinised toxin retaining only a 1/100 of its original toxicity as estimated by skin tests. He gave three to five doses of the material usually with an interval of 21 days between doses. The total quantity of active toxin given was less than the equivalent of 2000 skin test doses, yet it is not impossible that so small an amount of active toxin given with such long intervals between doses might account for the resulting immunity.

It also appears from Toyoda, Moriwaki, and Futagi's[1] observations on "toxoid" immunisation that toxic and antigenic power disappear pari passu in the formalinisation process. A significant immunity was only obtained when the material retained some degree of toxicity and the best all-round results were obtained with a preparation that produced generalised rashes in 1·3 per cent. of individuals immunised.

Other methods of study have equally given very uncertain indications as to the existence of a true toxoid to the streptococcal toxin. I have myself on many occasions attempted to utilise the flocculation test for the examination of this question and always without results. Eagles[16] was similarly unable to convince himself that such a test has any value, though Ramon[17] and his colleagues have claimed that the combining power of streptococcal toxin and antitoxin can be estimated in this way. Certain phenomena met with in the study of neutralising effects in human beings, particularly in those individuals who have a certain degree of immunity, might be interpreted as depending upon the presence of a combining as apart from a toxic element, but the difficulty of metrical precision in the estimations of such effects makes it unsafe to force their interpretation. It thus seems that we must prove the existence of a "scarlet fever toxoid" before discussing its use.

In dwelling on the disadvantages and difficulties I do not wish to imply that the methods of Dick-testing and active immunisation against scarlet fever have not an important place in preventive medicine. Already the incidence of scarlet fever among the nursing staffs of an increasing number of isolation hospitals has been reduced to negligible figures and the recent work of Stallybrass[18] indicates that practical results may even be obtained in children's institutions.

The "Allergic" Conception of Scarlet Fever.

A point of great biological interest which has arisen in the study of the Dick test is the curious lack of reactivity to the test observed in children during the first few months of life. With the exception of a series of interesting papers by Jean Cooke[19] there has been little comprehensive work carried out on this subject. Cooke showed that the majority of new-born children are not skin-sensitive to considerable amounts of the erythrogenic toxin. The lack of view has been most ably expounded by Trotter. I shall, however, put forward certain objections to the acceptance of the hypothesis that increased intracranial pressure is the essential cause of the clinical state we are considering.

In the first place the clinical picture of traumatic stupor is not strictly comparable with that encountered in patients whose cerebral symptoms are known to depend upon increased pressure. In a case of hydrocephalus, for instance, caused by a subtentorial tumour, the mental state is, as a rule, that of stupor with apathy. There is usually none of that irritability, restlessness, and confusional excitement which characterise the state which I have called traumatic stupor and which have earned for it such descriptive titles as "cerebral irritation" or "traumatic delirium." Indeed, if we look for comparable clinical states, we shall find them in such conditions as infective or toxic delirium, or in encephalitis, rather than in simple states of increased intracranial pressure.

The second important objection is that, although in the majority of cases of traumatic stupor the pressure of the cerebro-spinal fluid is raised, I have found no correlation between the degree of pressure and the severity of the clinical state, and in some instances of severe traumatic stupor have found the pressure little raised or even normal. For example:—

A man, aged 66, was knocked down by a car on the night of June 30th, 1929, and admitted to hospital late the same night. On admission he was in a state of stupor. I saw him on July 2nd, 36 hours after the injury. There were abrasions of face and scalp, but no evidence of fractured skull. He was stuporose and restless, needing to be restrained at times from getting out of bed. I could find no signs of any focal lesion of the brain. Both plantar responses were flexor. The cerebro-spinal fluid showed a pressure of 120 mm. of water, and was evenly blood-stained. During the subsequent ten days he remained so confused and restless as to need a male attendant. He gradually recovered, and when last seen, five months later, was quite well save for occasional giddiness on turning his head quickly.

Comparable observations are:—

Male, 52. Nine days after injury: stupor continuous since accident; cerebro-spinal fluid xanthochromic; pressure 130 mm. water.

Female, 46. Five days after injury: restless stupor; cerebro-spinal fluid slightly blood-stained; pressure 150 mm. water.

Male, 48. Two days after injury: stuporose; cerebro-spinal fluid slightly yellow; pressure 110 mm. water.

Male, 16. Three days after injury: semi-conscious and resistive; cerebro-spinal fluid clear, but contained many red cells when examined microscopically; pressure not above 170 mm. water, despite struggling during the reading.

I submit, therefore, that increased intracranial pressure from œdema and hæmorrhage cannot be the essential cause of traumatic stupor.

An alternative hypothesis which has been ably supported by Bagley, both from clinical observation and animal experiment, is that subarachnoid hæmorrhage may play an important part in the causation of symptoms. I have found, however, that there is no constant relation between the amount of blood in the cerebro-spinal fluid and the severity of the clinical symptoms. The cases which I have already quoted illustrate this point.

We must therefore, I believe, look for some other explanation. Direct pathological evidence is scanty but suggestive. Careful microscopical examination in cases proving fatal within the first few days, without compound fracture of the skull or compression from meningeal hæmorrhage, shows, in addition to scattered hæmorrhages, widespread alterations in the structure of nerve-cells and fibres. Similar examination, when it has occasionally been possible at a later date in cases that have survived the injury and died of intercurrent disease, has shown chromatolysis and lipoid degeneration of nerve-cells, fragmentation and fatty degeneration of myelin, and a widespread and diffuse reactive process of the micro- and macro-glia (Rosenhagen). These changes, which Rosenhagen well describes, are to be found in the form of multiple small foci throughout the cerebral cortex in its whole extent.

I am led, therefore, to the conclusion that the essential cause of traumatic stupor is direct injury to the neural tissues with subsequent reactive changes, and that increased intracranial pressure and subarachnoid hæmorrhage play a subordinate rôle.

TREATMENT.

This conclusion, if valid, will have an important bearing upon treatment. In every case of traumatic stupor lumbar puncture should be performed, and the manometer should be employed. If the spinal fluid pressure is found to be high, it should be reduced by drainage to a normal level, and further treatment, such as concentrated magnesium sulphate solution per rectum or hypertonic glucose solution intravenously, should be given to reduce intracranial pressure. Lumbar puncture in such a case should be repeated if necessary, so that the result of treatment may be followed. A heavily blood-stained fluid provides an additional indication for drainage.

Such methods of treatment, however, are to be regarded as accessory and to be employed only in the light of the information given by diagnostic lumbar puncture. The guiding principle in routine treatment will be to provide optimum conditions for the natural recovery of damaged cerebral tissues—that is, absolute rest from stimulation (aided by sedatives) in the early stages, and a carefully graduated and prolonged convalescence.

PROGNOSIS.

The ultimate prognosis in these cases is a matter of extreme difficulty. The gross disturbance of cerebral function seen in the early stages must be due to recoverable damage. But there is abundant clinical and some pathological evidence to show that there is nearly always some residual injury of a permanent kind. My own observations have taught me that among manual workers, if clouding of consciousness has persisted for longer than 24 hours after the injury, the chances of an ultimate return to full work are not greater than one in three.

Post-traumatic Cerebral Syndrome.

I would direct attention next to that group of symptoms which may be observed either in the convalescent stage after a severe injury with traumatic stupor or after a minor injury with or without concussion, and which, following Foerster, we may call the post-traumatic general cerebral syndrome. Here again we are confronted with a clinical picture in which the signs of focal cerebral damage are as a rule lacking.

The organic basis of this condition, long emphasised by Duret, has more recently been shown to comprise minor degrees of damage to the nerve-cells and fibres of the same kind as that already described in traumatic stupor (Rosenhagen), and changes in the pressure and circulation of the cerebro-spinal fluid (Bielschowsky). I have not time to refer to this important work in detail, but propose to select one or two clinical problems from this field for consideration.

The first is the extreme frequency of the symptom of vertigo. This symptom, particularly experienced view that desquamation is a direct result of the skin injury sustained at the time rash is florid. While it may be admitted in a majority of cases to be a *petitio principii* to diagnose scarlet fever from desquamation alone, many experienced observers claim to have seen desquamation following disease without any rash having been noted, and these cases have often been found to propagate fresh cases of typical scarlet fever. The difficulty is well expressed by Graves[25] in his Clinical Lectures.

"We are taught," he says, "to look upon desquamation as a result of cutaneous affections of an inflammatory character; and it is an opinion, very generally maintained, that in scarlatina, as in psoriasis, the peeling off of the cuticle depends on the peculiar state of the skin produced by inflammation." In the same lecture he quotes the case of a young lady with sore-throat and fever who desquamated and in whom, though he had her under constant observation, he nevertheless failed to observe a scarlet rash at any time during the disease. He adds that three members of the household subsequently contracted typical scarlet fever and that the lady's father developed sore-throat.

Now that a rash-producing toxin has been isolated from the causal agent of scarlet fever, the problem raised by Graves becomes none the less difficult. It is hard to imagine that desquamation really follows cases without a rash and it is always possible that in some cases the rash may be evanescent, perhaps nocturnal, and thus be missed. The Dick test may provide a method which may throw some light on the matter and it would be interesting to know whether such desquamating cases of "scarlet fever" without apparent eruption are usually positive or negative to the test and, if positive, whether the reaction becomes negative during the course of the disease.

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WORCESTER INFIRMARY.—The "record" number of 2141 in-patients was received last year; their average stay was 19·5 days, and their average cost 6s. 7½d. per day. At £120 18s. 7d. the cost per occupied bed showed a reduction of £7. Out-patients, of whom there were 6369, cost 10s. 3¾d. each. The hospital is being extended at a cost of £60,000, little more than half of which has yet been obtained.

THE EFFECTS OF INJURY UPON THE BRAIN.[*]

BY C. P. SYMONDS, M.D. OXF., F.R.C.P. LOND.,
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THE effects of direct injury to the brain, as considered by the neurologist, fall naturally into two groups. The one comprises those cases which end fatally, usually within the first two or three days, with evidence post mortem of gross laceration and contusion. Cases within this group provide little opportunity for clinical study. From the moment of injury to that of death the clinical state is that of profound stupor. The second group, comprising all those patients who survive the injury, offers a field of neurological inquiry which is as fascinating as it is difficult. It is from this clinical field that I shall select certain problems for discussion.

Traumatic Stupor.

The first is that afforded by the condition which I shall designate "traumatic stupor." I have chosen this term deliberately, even though it adds to the plethora of labels. It seems to me that we need some such title, clinical and descriptive, and therefore of lasting value, to cover the major effects of cerebral injury.

That a patient is suffering from traumatic stupor is a simple statement of fact, as a rule easily determined. Whether he is suffering from cerebral contusion or cerebral œdema or the after-effects of "concussion" is a question at present unsolved. Traumatic stupor, therefore, I take, in its several degrees, to cover all those conditions in which, after recovery from the initial and complete loss, consciousness remains clouded. In its severe degree the clinical picture is one with which we are familiar in hospital experience. I shall not attempt to describe it in detail, but would draw attention to three of its most striking features:—

1. The mental state varies from that of profound stupor to a moderate clouding of consciousness, with phases of irritability, excitement, and delirium.
2. In the great majority of cases signs of focal damage to the brain are conspicuously absent.
3. In relation to the severity of the mental disturbance in the earlier stages recovery of cerebral function is remarkably rapid and complete.[†]

PATHOLOGY.

For the proper treatment of this condition we need a true estimate of its pathological basis. But direct evidence of this is, for the most part, lacking. We have therefore to depend largely upon a comparison of the clinical picture with analogous states of other causation, together with such information as may be derived from our knowledge of intracranial physiology and the disturbances of function likely to result therein from trauma.

In order to explain the association of a profound disturbance of the mental state with absence of localising signs and a relatively rapid and complete recovery, we look for a widespread or diffuse pathology. An explanation which at first sight appears acceptable is that of a general embarrassment of the capillary circulation from increased intracranial pressure, the result of multiple hæmorrhages and œdema. This ght weeks after the accident the pressure was 230 mm.; nstituents normal. Following this he had a severe bout headache, with drowsiness and vomiting, for which he as admitted to hospital, when a definite swelling of both tic discs was noted. The symptoms disappeared after day or two, and he returned to a state in which he peared normal in every way. Further examination 13 eeks after the injury showed a pressure of 300 mm., otwithstanding the absence of all symptoms. Papillœdema as still visible. Subsequently the boy attended school nd has remained well during the succeeding five years.

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[*] Based upon a paper read at the International Neurological Congress, Berne, 1931.

[†] As judged by our somewhat coarse tests.

Thus it appears after a head injury, in the absence f any fracture of the skull or demonstrable focal sion, a state of increased intracranial pressure may ersist for at least three months. Equally striking n this case is the comparative absence of ymptoms.

If the lines of clinical distinction between these arieties of headache be valid they will serve as guides o differential treatment. The "psychogenic" type f headache will be amenable only to general measures f cerebral rest, including the removal, when present, f litigation worries. The intermittent, localised ariety of headache, related to change of posture, nay, in the light of Penfield's and Bielschowsky's work, prove capable of relief by air injection or in severe cases by operation. The rarer hydrocephalic form invites treatment by repeated lumbar puncture.

Delayed Symptoms.

There is one other aspect of the clinical problem which compels attention. In not a few cases the symptoms—sometimes severe—of cerebral injury may supervene after a considerable latent interval. The subsequent clinical course suffices to exclude late meningeal hæmorrhage (subdural hæmatoma) as the cause. For example:—

A male, aged 29, on May 7th, 1930, was struck on the head by the blunt end of an axe weighing 7 lb. He did not lose consciousness. The lacerated scalp was sewn up at hospital. After resting for 36 hours he returned to work as a labourer for five days without symptoms. On the eighth day after the accident he complained of severe headache, continuous, dull, bursting, frontal, aggravated by swinging a hammer or lying down; better when standing up; also of an intermittent stinging pain in the right sub-occipital region, unrelated to circumstance, occurring every two or three hours and associated with intense giddiness of a dizzy, drunken nature.

When seen on the tenth day after the accident he showed the following signs: right pupil larger than left; nystagmus, more to right than left; generalised hypotonia; tendon-jerks in upper limbs absent; in lower limbs sluggish; superficial reflexes normal.

He was admitted to hospital and treated with rest and hypertonic salines. On the fifteenth day he showed nystagmus, coarse and slow to the right, rapid and finer to the left. All deep reflexes were absent, even with reinforcement. The abdominal reflexes were feebly present on the right, absent on the left; both plantar responses were absent. The cerebro-spinal fluid was clear, pressure 180 mm. of water, and contained no trace of blood; protein, 0·05 per cent. This patient made a slow recovery with rest and graduated convalescence, and returned to light work four and a half months after the accident.

The occurrence of such cases is undisputed. What is the pathology of the latent interval? Marchand has suggested that it is a gradually developing reaction of the cerebral tissues to areas of necrosis produced by the initial injury—a process which he has named traumatic encephalitis. A similar view has been put forward by Osnato and Giliberti. The experimental observations of Rio-del-Hortega and Penfield go some way towards supporting this hypothesis. Nevertheless the intensity of the symptoms in such a case as I have related, and the acuteness of their onset, suggest that other factors also—probably hydrostatic—are active.

It is evident that, despite the important work which has already been done, the study of brain injuries offers a rich field of inquiry both to the clinical neurologist and to the neuropathologist.

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VACCINIA AND THE PASCHEN BODY:

INFECTION EXPERIMENTS WITH CENTRIFUGALISED VIRUS FILTRATES.

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IMPROVEMENTS in technical methods of virus research have led to renewed study in recent years of the claim put forward by Paschen so long ago as 1906 that the elementary bodies discovered by him in material from vaccinial lesions might prove to be the actual ætiological agents. The present position may be thus summarised:—

(1) The elementary bodies which are readily demonstrated by appropriate staining methods are invariably found in enormous numbers not only in the characteristic skin exanthem, but also in those gross organ lesions which may follow the inoculation of highly potent virus in experimental animals.

(2) Bechhold and Schlesinger (1931) in an attempt to estimate the size of the infective virus particle in vaccinia by physical calculations based on high speed centrifugalisation experiments with virus suspensions, obtained a figure (0·21μ–0·23μ) for the diameter of the virus particle which agrees closely with the many recorded measurements of the stained Paschen body—viz., 0·2μ–0·25μ. The actual diameter of the naked Paschen body is doubtless less than 0·2μ and one of us (L.) has observed that the stained bodies contained in pure suspension in formalised saline are distinctly smaller than in their native element where their natural size is enhanced by deposition of stain and by the presence of serum proteins in the menstruum. Moreover, from the recently published experiments of Elford and Andrewes (1932) on the filtration of vaccinia virus through collodion membranes of varying porosity, the calculation is made that the size of the infective virus particle is of the order of 0·125μ–0·175μ and thus considerably less than that derived from Bechhold's centrifuge experiment.

Even direct measurements of naked bacteria and cocci are notoriously subject to error and such error must be still greater with such small objects as Paschen bodies. It would seem hardly likely, however, in view of the estimated range of diameter based on filtration and centrifuge experiments, that any claimant other than the well-known Paschen on stooping or on quick turning of the head, is as a rule unassociated with any deafness or tinnitus. Are we then dealing with a labyrinthine lesion or with damage to the structures of the brain-stem? If the latter, what is the explanation of the frequency of this system? It may possibly be found in the hypothesis of Duret.

INDIRECT INJURY TO BRAIN-STEM.

As the result of experimental work in animals and pathological observation in man, he concluded that in all cases of blunt head injury an important rôle was played by the cerebro-spinal fluid in the transmission of the force of the blow to the intracranial tissues as a whole. He observed that the structures in relation to the walls of the ventricles, and especially the aqueduct of Sylvius and fourth ventricle, suffered severely, and supposed this to be due to momentary distension of these cavities by displacement of cerebro-spinal fluid. If then we regard the vertigo as evidence of injury to the brain-stem, we may find in Duret's hypothesis an explanation of the frequency of this symptom after major or minor head injury. There is another symptom of not infrequent occurrence which may have a similar explanation: diplopia of a nuclear type. I have notes of ten cases of minor head injury (without fracture) in which diplopia was complained of during the first two or three days. Unfortunately, a detailed ophthalmological observation at the time was only possible in three. In two of these the ophthalmologist reported paresis of one superior rectus, and in the other there appeared to be paresis of one inferior rectus. In two of the others the complaint has been of diplopia on looking upwards only.

Occasionally the clinical picture of brain-stem disturbance may be much more definite. For example:—

A male, aged 19, was struck on the left parietal region on May 1st, 1930, by a cricket-ball coming from above and behind. There was no scalp wound. He was knocked down, dazed, but not unconscious. He attempted to rise but could not do so, and lay on the ground for seven or eight minutes. He then got up, changed from flannels into ordinary clothes, and went home by tram, a journey of 40 minutes. During this time he felt sick, but had no other symptoms. Arriving home he went to bed and then vomited. Subsequently he continued to vomit after every meal. He also experienced headache of two kinds: the first a continuous pressure at the back of the head, faint and intermittent; the second, attacks of pain which he referred to the forehead and described as being a pressure like that of a 20 lb. weight inside and acting downwards, lasting five minutes at a time. This latter was brought on by stooping or walking about. Shifting from the horizontal to the sitting position quickly brought it on, but change in the reverse direction gave relief.

On May 3rd, 1930, as his symptoms continued, he got up to come to hospital. He then felt as if his head were going round, and found his gait reeling and unsteady. On examination he showed a slight nystagmus, more to the right than to the left. His gait, with eyes open, appeared normal. Standing with eyes shut, his head tended to fall with the occiput to the right shoulder, and he swayed to the right and back. All deep reflexes were present and equal; the abdominals were diminished on the left, the plantar responses flexor. He was admitted to hospital and put to bed.

On May 8th, 1930, nystagmus, especially to the right, was marked; abdominal reflexes were absent. He had had no vomiting or headaches since admission to hospital. On May 12th, 1930, he had been allowed to sit up in a chair on the previous day. After an hour or so violent headache and dizziness supervened. On examination, in addition to the nystagmus, he showed absence of all tendon-jerks in the upper limbs; knee- and ankle-jerks were obtained with difficulty; abdominals were present on the right, absent on the left; the right plantar response was absent, left flexor. Lumbar puncture showed a clear fluid; pressure 240 mm. of water; no cells; protein, 0·07 per cent.

On May 22nd, 1930, nystagmus was coarse and slow to the right; fine and rapid to the left; tendon-jerks in upper limbs present and equal; right upper and lower abdominals absent; left upper and lower abdominals showed an occasional twitch; knee-jerks present, but sluggish; plantar responses flexor; no headache or vomiting. He subsequently developed measles, and was transferred to another hospital; there he had pneumonia, and therefore was not out of bed until July 9th. He declared himself free from symptoms at the time of examination (July 16th, 1930). He showed slight nystagmus to the right only, and no abnormality of posture or gait. All tendon-jerks were present and equal; abdominal reflexes present and equal, and plantar responses flexor. One year later he reported himself as back at full work (manual) and well, except for occasional headaches.

Types of Headache.

Among the several varieties of headaches encountered in this general post-traumatic state I shall attempt to distinguish three groups.

The first is that complained of by the patient in terms of discomfort rather than pain—a continuous sense of numbness or pressure, aggravated by all kinds of mental stimulus, whether internal—e.g., worry over incapacity—or external (noise, bright light). This is the kind of headache met with in psychogenic states, but also in certain psychoses—for instance, the toxic group and the depressive—and may be considered as one of the reflections in consciousness of general cerebral incapacity.

A second variety, often associated with the first, is equally frequent and of a quite different character. It is complained of as throbbing, piercing, or aching, is localised rather than diffuse, occurs in bouts, usually of brief duration, and is aggravated by change of posture and physical effort as well as by mental stimuli. This kind of headache is often referred to the situation of the initial injury and is sometimes associated with superficial tenderness. Its character and relation to postural change and effort indicate dependence upon some local physical cause, and the recent observations of Penfield, Bielschowsky, and others suggest that this may be found in the shape of loculation in the subarachnoid mesh or ventricular system.

A third and relatively uncommon variety of post-traumatic headache is that which appears in bouts of considerable duration and severity, and has the bursting quality and association with vomiting which suggests a hydrocephalic state. A bout of this kind may be provoked by alcoholic excess or by a severe physical effort—e.g., cranking a refractory automobile. The liability may remain for a short time only after the injury or may persist indefinitely. Assuming the basis of this kind of headache to be a hydrocephalus, is this obstructive—a secondary effect of brain-stem contusion—or is it communicating—due to an increased secretion or defective absorption of cerebro-spinal fluid? Certain observers have postulated a traumatic hydrocephalus of the communicating variety. The following case, recorded by my clinical assistant at Guy's Hospital at the time (Dr. N. L. Lloyd) is the most suggestive I have met with in this connexion.

A male, aged 4, was admitted to hospital unconscious after a severe head injury. He showed bruising behind and below the left mastoid and over the left frontal region. There was no clinical or X ray evidence of fractured skull. There was no striking abnormality of the cranial nerves. The muscles were flaccid with absent deep reflexes and bilateral extensor plantar responses. The cerebro-spinal fluid was intimately mixed with blood and showed a pressure of 300 mm. of water. He remained unconscious for two days and drowsy for a further four days. Subsequently he made a rapid recovery, and was discharged from hospital apparently well a month after his accident.

Five weeks after the accident the cerebro-spinal fluid pressure was 225 mm. of water; no excess of cells or protein.

Eight weeks after the accident the pressure was 230 mm.; constituents normal. Following this he had a severe bout of headache, with drowsiness and vomiting, for which he was admitted to hospital, when a definite swelling of both optic discs was noted. The symptoms disappeared after a day or two, and he returned to a state in which he appeared normal in every way. Further examination 13 weeks after the injury showed a pressure of 300 mm., notwithstanding the absence of all symptoms. Papillœdema was still visible. Subsequently the boy attended school and has remained well during the succeeding five years.

Thus it appears after a head injury, in the absence of any fracture of the skull or demonstrable focal lesion, a state of increased intracranial pressure may persist for at least three months. Equally striking in this case is the comparative absence of symptoms.

If the lines of clinical distinction between these varieties of headache be valid they will serve as guides to differential treatment. The "psychogenic" type of headache will be amenable only to general measures of cerebral rest, including the removal, when present, of litigation worries. The intermittent, localised variety of headache, related to change of posture, may, in the light of Penfield's and Bielschowsky's work, prove capable of relief by air injection or in severe cases by operation. The rarer hydrocephalic form invites treatment by repeated lumbar puncture.

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(1) The elementary bodies which are readily demonstrated by appropriate staining methods are invariably found in enormous numbers not only in the characteristic skin exanthem, but also in those gross organ lesions which may follow the inoculation of highly potent virus in experimental animals.

(2) Bechhold and Schlesinger (1931) in an attempt to estimate the size of the infective virus particle in vaccinia by physical calculations based on high speed centrifugalisation experiments with virus suspensions, obtained a figure (0·21μ–0·23μ) for the diameter of the virus particle which agrees closely with the many recorded measurements of the stained Paschen body—viz., 0·2μ–0·25μ. The actual diameter of the naked Paschen body is doubtless less than 0·2μ and one of us (L.) has observed that the stained bodies contained in pure suspension in formalised saline are distinctly smaller than in their native element where their natural size is enhanced by deposition of stain and by the presence of serum proteins in the menstruum. Moreover, from the recently published experiments of Elford and Andrewes (1932) on the filtration of vaccinia virus through collodion membranes of varying porosity, the calculation is made that the size of the infective virus particle is of the order of 0·125μ–0·175μ and thus considerably less than that derived from Bechhold's centrifuge experiment.

Even direct measurements of naked bacteria and cocci are notoriously subject to error and such error must be still greater with such small objects as Paschen bodies. It would seem hardly likely, however, in view of the estimated range of diameter based on filtration and centrifuge experiments, that any claimant other than the well-known Paschen body is likely to be forthcoming for the position of infective virus particle.

(3) One of us (Ledingham, 1931, 1932) has reported that pure suspensions of elementary bodies in vaccinia and fowl-pox can be obtained in an indifferent medium of formolised saline and that such suspensions are specifically agglutinated by the serum of vaccinated animals. Their agglutination can be readily followed in hanging drop preparations with a two-thirds inch objective and the stained clumps are found to consist wholly of elementary bodies. Moreover, after a single dose of virus, agglutinins appear in the serum, rise to a maximum, and slowly fall precisely as do agglutinins in response to any bacterial antigen.

(4) The elementary bodies have recently been shown by Nauck and Paschen (1932) to increase in numbers in cultures of vaccinia virus grown in vitro in the presence of testicular tissue, and we may state here that we have been able to demonstrate the presence of numerous Paschen bodies in stained preparations of vaccinia cultures grown by Eagles and McClean (1931) in a cell-free medium.

OBJECT OF PRESENT EXPERIMENTS.

The experiments here recorded were undertaken to secure further evidence in support of the claim for the Paschen body to be the actual infective agent. They are substantially amplifications of such experiments as those of Ward (1929) and Tang (1930) who followed up their successful filtrations of vaccinia virus through low-grade candle filters by centrifuging the filtrates and demonstrating a concentration of virus in the bottom layers. The results certainly supported their view that the infective particle may be " of considerable size " and that the nature of the material submitted to centrifugalisation rather precluded the possibility of virus being simply adsorbed on inert particles which had escaped the filter. Centrifugalisation of carefully prepared suspensions of neuro-vaccine by Bland (1929) also supported strongly the view that the virus of vaccinia can be thrown down by the centrifuge given sufficient time and speed.

EXPERIMENTAL METHODS.

Our experiments have all been carried out with Berkefeld " V " filtrates of vaccinia virus which have been submitted to centrifugalisation with a new model high speed centrifuge (manufactured by Baskerville and Lindsay, Manchester) capable of speeds up to 14,000 revolutions per minute with a 10 c.cm. load. One of us (E.) was responsible for the centrifugalisation and the experimental testing of the various supernatants and deposits, while the other undertook the examination of the stained deposits for the presence of Paschen bodies.

For the cutaneous inunction of rabbits two strains of virus were used—viz., a testicular strain of rabbit origin and a purely dermal strain of sheep origin. Some few experiments were also carried out with testicular tissue infected with neuro-vaccine, but these on the whole were less satisfactory, so far as completeness of deposition of virus was concerned, possibly because the filtrates were heavily charged with hæmoglobin and perhaps also because the Paschen body content of the filtrates was very high. The filtration technique was that employed in former experiments by Green and Eagles (1931).

The lapine was removed from the backs of rabbits on the third or fourth day after inunction. The pulp was thoroughly ground in a mortar, no sand or other material being used to facilitate grinding. After suitable dilution with distilled water the virus suspension was lightly centrifugalised, then passed through coarse filter paper, and finally through a Berkefeld " V " candle. All filtra used were water-clear, bacteriologically sterile, and of f potency when tested by intradermal inoculation in t rabbit.

EXPERIMENTAL DATA.

The three experiments (A, B, and C) record in detail below are selected from a set of about in all, because they illustrate best the effect of var tion in speed and time of action of centrifuge on t deposition of virus from filtrates and on the furtl purification of macroscopically visible or invisil deposits by repeated saline washings.

Experiment A (Table I.).—To determine how t concentration of virus contained in filtrate w affected by centrifugalisation of 4 c.cm. filtrate f 30 min. at 10,000 rev. per min.

After removal from the centrifuge the supernatant flu was carefully pipetted off in 1 c.cm. amounts. The botto c.cm. was found to be in contact with a faintly visil deposit which was incorporated with it by thorough mixi after being scraped from the glass with a platinum spatu Samples from the upper c.cm., the third c.cm., and the four c.cm. containing the scraped off deposit were titrated f potency on the rabbit by intradermal inoculation in paral with the unspun filtrate as control. Table I. shows th the fourth c.cm. and the third c.cm. contained by far t major portion of the virus, the end-point being not nea reached in the case of the former. The figures in the Tal represent the diameters (or average diameters) of ca reaction at its height, but it should be borne in mind th for comparative purposes the cubes of the diameters are mo strictly appropriate.

Examination for Paschen bodies.—Film from fourth c.c showed very large numbers of elementary bodies mos in carpets but occasionally in agglomerations. In the upp and third c.cms. only very few bodies could be detect

TABLE I.—*Experiment A.*

Material used: Filtrate of lapine obtained by sl inunction of rabbit with neuro-testicular virus.

Potency Tests of Supernatants and Deposits.

Dilution.	Control. Unspun filtrate.		4th c.cm. containing incorporated deposit.		Upper c.cm		3rd c.cm	
	Day—4th	5th	4th	5th	4th	5th	4th	5t
10^{-1}	25 m.	30 m.	35 m.	40 m.	20 m.	22 m.	20 m.	25
10^{-2}	20 m.	25 m.	30 m.	35 m.	15 m.	15 m.	18 m.	20
10^{-3}	15 m.	15 m.	25 m.	32 m.	10 m.	10 m.	13 m.	13
10^{-4}	10 m.	10 m.	15 m.	15 m.	±	±	5 m.	8
10^{-5}	±	5 m.	18 m.	18 m.	n	n	±	5
10^{-6}	n	n	12 m.	12 m.	n	n	n	n

m. = millimetre. ± = reaction appearing faintly red b not measurable.

Experiment B (Table II.).—Centrifugalisation f one hour periods at 12,000–14,000 rev. per min.

The entire supernatant was removed, care being taken avoid disturbance of deposit in contact with the glass. Th supernatant was again spun at the same speed for one hou It was removed from possibly present but invisible depos and spun a third time for one hour. In this way thr deposits were obtained for titration purposes along wi samples of the various supernatants and the unspun filtrat Only the first deposit was visible to the naked eye. Th three deposits were carefully scraped and mixed each wi three drops of saline from a standard drop pipette. Table I shows that the major portion of the virus was present the first deposit after one hour's spinning, while the secor and third deposits contained diminishing amounts of viru The supernatant which had been submitted to two hour spinning contained only a trace of virus, but after thre hours' spinning was entirely devoid of activity.

Examination for Paschen bodies.—Film from first depos showed colossal numbers of elementary bodies mostl entirely in big and little aggregations and attached to or i the neighbourhood of amorphous flaky matter. The hig speed of spinning had obviously caused packing of the bodi he glass. The second deposit contained only occasional ll packets, while the third appeared entirely free of ies. In the two supernatants elementary bodies could with certainty be detected.

TABLE II.—*Experiment B.*

laterial used: Filtrate of lapine obtained by skin nction of rabbit with neuro-testicular virus.

Potency Tests of Supernatants and Deposits.

lu- on.	Control.		1st dep.		2nd sup.		2nd dep.		3rd sup.		3rd dep.	
	Unspun filtrate.											
	Day—4th	5th	4th	5th	4th	5th	4th	5th	4th	5th	4th	5th
)–^{1}	25 m	25 m	45 m	50 m	±	5 m	15 m	20 m	n	n	5 m	8 m
)–^{2}	20 m	25 m	40 m	45 m	n	n	10 m	15 m	n	n	n	±
)–^{3}	15 m	20 m	30 m	35 m	n	n	±	8 m	n	n	n	n
0–^{4}	12 m	15 m	25 m	30 m	n	n	±	±	n	n	n	n
0–^{5}	8 m	10 m	20 m	25 m	n	n	n	n	n	n	n	n
0–^{6}	±	5 m	15 m	20 m	n	n	n	n	n	n	n	n

dep. = deposit; sup. = supernatant.

Experiment C (Table III.).—To determine the otency of repeatedly washed deposit. Centrifugalisaion for one hour at 12,000–14,000 rev. per min.

A small amount of fluid inevitably remains in contact with he deposit when the supernatant is removed. In order to ee the elementary bodies from this fluid the supernatant as entirely removed and the deposit carefully incorporated ith 4 c.cm. of salt solution. This saline suspension was ow spun for one hour and the deposit again washed in saline nd re-spun. This twice-washed deposit was incorporated n three drops of saline and along with the second saline upernatant and the primary supernatant removed from he first deposit, submitted to potency test. Table III. hows that the virus was concentrated in the twice-washed eposit, while the second saline washing was entirely free f virus. A small amount of virus was, as might be expected, present in the primary supernatant.

Examination for Paschen bodies.—Films of the final twice-washed deposit showed colossal numbers of elementary bodies mostly in small and large packets, but occasionally in large sheets. In the other fluids they were not definitely detected.

TABLE III.—*Experiment C.*

Material used: Filtrate of lapine obtained by skin inunction of rabbit with lymph of ovine origin.

Potency Tests of Supernatants and Deposits.

Dilution.	Control.		Twice-washed dep.		Saline sup.		Primary sup.	
	Unspun filt.							
	Day—4th	5th	4th	5th	4th	5th	4th	5th
10^{-1}	20 m.	20 m.	22 m.	25 m.	n	n	6 m.	8 m.
10^{-2}	13 m.	13 m.	20 m.	20 m.	n	n	5 m.	5 m.
10^{-3}	11 m.	11 m.	15 m.	15 m.	n	n	5 m.	5 m.
10^{-4}	n	n	15 m.	15 m.	n	n	n	n
10^{-5}	n	n	12 m.	12 m.	n	n	n	n
10^{-6}	n	n	±	5 m.	n	n	n	n

If the Paschen bodies are responsible for the potency of deposits it might be expected that the great concentration of virus in the latter, as shown by titration, would be reflected in the number of bodies found therein, and further, that deposits and supernatants which vary in potency would be associated with similar variations in their Paschen body content. The usual technique was to dip a 2 mm. platinum loop into the fluid to be tested for potency (whether supernatant, or bottom fluid with incorporated deposit, or washed deposit made up with saline). After withdrawal the fluid was spread as thinly as possible on a slide and treated and stained by the approved technique (see Med. Res. Council's System of Bacteriology, 1931, vol. ix., p. 132). Invariably the film from the first deposit has shown the presence of what would appear to be the great bulk of the Paschen bodies originally contained in the fluid spun, while in other fluids (primary supernatants and washings) only small numbers of bodies can be detected with certainty. It has been the practice of those experienced in the staining of elementary bodies never to diagnose their presence unless they occur in clearly recognisable collections large or small. Some method of enumeration is desirable, and doubtless if it were possible to disperse the collections and to obtain a homogeneous distribution the problem of enumeration would be greatly simplified.

DISCUSSION.

The representative experiments we have here recorded on the effect of high-speed centrifugalisation on virus filtrates and on the broad correlation of potency of fluids tested with their Paschen body content leave, in our opinion, no escape from the conclusion that these deposits, visible or invisible, owe their potency to the presence of Paschen bodies in them. The speed and the period of centrifugalisation are important for securing a virus-free supernatant. A speed of 10,000–11,000 rev. per min. acting for one hour has been found to result either in a concentration of the virus in the lower layer of the fluid or in a deposit which is so lightly attached to the glass that the supernatant fluid cannot be completely removed without disturbing the deposit. If a small quantity of gelatin is placed in the tip of pointed tubes before the virus filtrate is added, the elementary bodies can be held. The presence of gelatin however does not favour the search for the bodies in stained films. The experiments in which deposits were submitted to repeated washings in saline are, in our view, particularly convincing, inasmuch as the stained preparations of the potent fluids showed rich carpets of elementary bodies and an almost complete absence of other stainable matter formed or amorphous. As the saline menstruum itself was proved to contain no virus the conclusion is irresistible that the infecting agent is the Paschen body, though it is always possible to assume that the true virus may be something attached to the surfaces of Paschen bodies, but incapable of existing apart from them or of being dissociated by mechanical means such as repeated washing. In the present state of knowledge such criticism can have little cogency and, indeed, might be logically applied to any generally accepted causal bacterium on the ground that it is merely the vehicle of some lesser hypothetical agent.

With the further knowledge from the serological side (Ledingham) and the demonstration by Nauck and Paschen that in successful artificial cultures Paschen bodies are present in large numbers—a claim which we have been able to confirm for the cultures obtained by Eagles and McClean in cell-free media—the evidence in support of the Paschen body as the ætiological agent of vaccinia would seem to be reasonably complete. It is of very great interest in this connexion that Bedson (1932) has been able, by very similar means to those employed in this work, to secure evidence that the minute bodies found in psittacosis represent in all probability the actual infective agents. To conclude, it remains to be shown that artificial cultures starting from pure seedings of Paschen bodies are possible, and doubtless body is likely to be forthcoming for the position of infective virus particle.

(3) One of us (Ledingham, 1931, 1932) has reported that pure suspensions of elementary bodies in vaccinia and fowl-pox can be obtained in an indifferent medium of formolised saline and that such suspensions are specifically agglutinated by the serum of vaccinated animals. Their agglutination can be readily followed in hanging drop preparations with a two-thirds inch objective and the stained clumps are found to consist wholly of elementary bodies. Moreover, after a single dose of virus, agglutinins appear in the serum, rise to a maximum, and slowly fall precisely as do agglutinins in response to any bacterial antigen.

(4) The elementary bodies have recently been shown by Nauck and Paschen (1932) to increase in numbers in cultures of vaccinia virus grown in vitro in the presence of testicular tissue, and we may state here that we have been able to demonstrate the presence of numerous Paschen bodies in stained preparations of vaccinia cultures grown by Eagles and McClean (1931) in a cell-free medium.

OBJECT OF PRESENT EXPERIMENTS.

The experiments here recorded were undertaken to secure further evidence in support of the claim for the Paschen body to be the actual infective agent. They are substantially amplifications of such experiments as those of Ward (1929) and Tang (1930) who followed up their successful filtrations of vaccinia virus through low-grade candle filters by centrifuging the filtrates and demonstrating a concentration of virus in the bottom layers. The results certainly supported their view that the infective particle may be " of considerable size " and that the nature of the material submitted to centrifugalisation rather precluded the possibility of virus being simply adsorbed on inert particles which had escaped the filter. Centrifugalisation of carefully prepared suspensions of neuro-vaccine by Bland (1929) also supported strongly the view that the virus of vaccinia can be thrown down by the centrifuge given sufficient time and speed.

EXPERIMENTAL METHODS.

Our experiments have all been carried out with Berkefeld " V " filtrates of vaccinia virus which have been submitted to centrifugalisation with a new model high speed centrifuge (manufactured by Baskerville and Lindsay, Manchester) capable of speeds up to 14,000 revolutions per minute with a 10 c.cm. load. One of us (E.) was responsible for the centrifugalisation and the experimental testing of the various supernatants and deposits, while the other undertook the examination of the stained deposits for the presence of Paschen bodies.

For the cutaneous inunction of rabbits two strains of virus were used—viz., a testicular strain of rabbit origin and a purely dermal strain of sheep origin. Some few experiments were also carried out with testicular tissue infected with neuro-vaccine, but these on the whole were less satisfactory, so far as completeness of deposition of virus was concerned, possibly because the filtrates were heavily charged with hæmoglobin and perhaps also because the Paschen body content of the filtrates was very high. The filtration technique was that employed in former experiments by Green and Eagles (1931).

The lapine was removed from the backs of rabbits on the third or fourth day after inunction. The pulp was thoroughly ground in a mortar, no sand or other material being used to facilitate grinding. After suitable dilution with distilled water the virus suspension was lightly centrifugalised, then passed through coarse filter paper, and finally through a Berkefeld " V " candle. All filtrates used were water-clear, bacteriologically sterile, and of fair potency when tested by intradermal inoculation in the rabbit.

EXPERIMENTAL DATA.

The three experiments (A, B, and C) recorded in detail below are selected from a set of about 15 in all, because they illustrate best the effect of variation in speed and time of action of centrifuge on the deposition of virus from filtrates and on the further purification of macroscopically visible or invisible deposits by repeated saline washings.

Experiment A (Table I.).—To determine how far concentration of virus contained in filtrate was affected by centrifugalisation of 4 c.cm. filtrate for 30 min. at 10,000 rev. per min.

After removal from the centrifuge the supernatant fluid was carefully pipetted off in 1 c.cm. amounts. The bottom c.cm. was found to be in contact with a faintly visible deposit which was incorporated with it by thorough mixing after being scraped from the glass with a platinum spatula. Samples from the upper c.cm., the third c.cm., and the fourth c.cm. containing the scraped off deposit were titrated for potency on the rabbit by intradermal inoculation in parallel with the unspun filtrate as control. Table I. shows that the fourth c.cm. and the third c.cm. contained by far the major portion of the virus, the end-point being not nearly reached in the case of the former. The figures in the Table represent the diameters (or average diameters) of each reaction at its height, but it should be borne in mind that for comparative purposes the cubes of the diameters are more strictly appropriate.

Examination for Paschen bodies.—Film from fourth c.cm. showed very large numbers of elementary bodies mostly in carpets but occasionally in agglomerations. In the upper and third c.cms. only very few bodies could be detected.

TABLE I.—*Experiment A.*

Material used: Filtrate of lapine obtained by skin inunction of rabbit with neuro-testicular virus.

Potency Tests of Supernatants and Deposits.

Dilution.	Control.		4th c.cm. containing incorporated deposit.		Upper c.cm		3rd c.cm.	
	Unspun filtrate.							
	Day—4th	5th	4th	5th	4th	5th	4th	5th
10^{-1}	25 m.	30 m.	35 m.	40 m.	20 m.	22 m.	20 m.	25 m.
10^{-2}	20 m.	25 m.	30 m.	35 m.	15 m.	15 m.	18 m.	20 m.
10^{-3}	15 m.	15 m.	25 m.	32 m.	10 m.	10 m.	13 m.	13 m.
10^{-4}	10 m.	10 m.	15 m.	15 m.	±	±	5 m.	8 m.
10^{-5}	±	5 m.	18 m.	18 m.	n	n	±	5 m.
10^{-6}	n	n	12 m.	12 m.	n	n	n	n

m. = millimetre. ± = reaction appearing faintly red but not measurable.

Experiment B (Table II.).—Centrifugalisation for one hour periods at 12,000–14,000 rev. per min.

The entire supernatant was removed, care being taken to avoid disturbance of deposit in contact with the glass. This supernatant was again spun at the same speed for one hour. It was removed from possibly present but invisible deposit and spun a third time for one hour. In this way three deposits were obtained for titration purposes along with samples of the various supernatants and the unspun filtrate. Only the first deposit was visible to the naked eye. The three deposits were carefully scraped and mixed each with three drops of saline from a standard drop pipette. Table II. shows that the major portion of the virus was present in the first deposit after one hour's spinning, while the second and third deposits contained diminishing amounts of virus. The supernatant which had been submitted to two hours' spinning contained only a trace of virus, but after three hours' spinning was entirely devoid of activity.

Examination for Paschen bodies.—Film from first deposit showed colossal numbers of elementary bodies mostly entirely in big and little aggregations and attached to or in the neighbourhood of amorphous flaky matter. The high speed of spinning had obviously caused packing of the bodies thout symptoms. After treatment ceased, thick ›od films were taken daily from all patients who ıld be induced to remain in hospital under observa-›n. In one case benign tertian parasites reappeared the blood nine days after completion of a seven-day urse of quinine treatment (grs. 30 daily). Accord-gly, in Table III., only those cases who remained ıder subsequent observation for nine days or more .ve been included.

TABLE III.—*Relapse After Treatment.*

—	Quinine-treated *cases.*			Atebrin-treated *cases.*		
	B.T.	S.T.	Q.	B.T.	S.T.	Q.
ıses observed 9 days or more after treatment ceased	11	6	17	4	9	6
'eriod of observa-tion in days. Limits	9–28	9–21	9–48	10–47	9–43	9–66
'eriod of observa-tion in days. Aver.	14	16	22	24	17	25
roportion of relapses ..	6/11	2/6	5/17	0/4	0/9	0/6
ercentage of relapses ..	55	33	29	0	0	0
)ay when relapse occurred. Limits	9th–18th	13th–15th	15th–27th	No relapses.		
)ay when relapse occurred. Aver.	14th	14th	20th			
orm of parasite found in blood on relapse ..	6/6*	2/2*	3/5* 2/5†	,,		

* Relapsed with B.T. parasites. † Relapsed with quartan arasites.

Thirteen relapses were noted among 34 quinine-reated cases.† Among a total of 19 cases treated rith atebrin and observed, on an average, over omewhat longer periods, no relapses occurred; and, ılthough the numbers observed were comparatively ›mall, the results appear to indicate that atebrin nay be superior to quinine in preventing relapses.

ACTION OF QUININE AND OF ATEBRIN ON GAMETOCYTES.

Disappearance of the gametocytes during treatment.—In the benign tertian cases, treatment with atebrin brought about a rapid disappearance of gametocytes, and, in this respect, it was similar to quinine. The effect of both quinine and atebrin on quartan gametocytes was less marked than on those of *P. vivax*, but in no case were the gametocytes of *P. malariæ* found in the blood later than the twelfth day after the inception of treatment, although administration of the drugs had ceased on the seventh day. The resistance of the gametocytes of *P. falciparum* to quinine is well known, and they may persist for some weeks after the trophozoites have disappeared, even though the quinine treatment is continued. In the two series of cases under discussion, neither quinine nor atebrin appeared to have any directly destructive effect on the gametocytes in the blood of the subtertian patients.

Interference with the viability of gametocytes.—Plasmoquine has been shown to affect the viability of subtertian gametocytes in such a way as to prevent them developing further in the mosquito. With this in mind, experiments were undertaken to find whether atebrin affected the viability of gametocytes in the same way. Again, cases treated with quinine were used as controls, and batches of anopheline mosquitoes were fed at certain times during the period of treatment on (*a*) cases treated with quinine, and (*b*) cases treated with atebrin. Neither drug was found to affect the viability of subtertian or benign tertian gametocytes, and the results are given in Table IV.

TABLE IV.—*Showing Lack of Effect of Quinine and Atebrin on the Viability of Gametocytes.*

(*a*) *Quinine** (grs. 30 daily).

Gametocyte carriers of—	Gameto-cytes in blood (per c.mm.).	Days of treatment given.	Total of drug given.	Mosquitoes infected (oöcysts and sporozoites).
P. vivax ..	58	1·3	grs. 40	*A. maculatus*
P. falciparum	277	13	grs. 390	,,

(*b*) *Atebrin** (0·2 to 0·4 g. daily).

Gametocyte carriers of—	Gameto-cytes in blood (per c.mm.).	Days of treatment given.	Total of drug given.	Mosquitoes infected (oöcysts and sporozoites).
P. vivax ..	1300	1·3	0·3 g. (grs. 4½)	*A. hyrcanus* var. *sinensis* *A. subpictus* var. *malayensis*
P. falciparum	6440	7	2·8 g. (grs. 43)	*A. vagus* *A. kochi* *A. aconitus* *A. philippinensis*
P. falciparum	640	7	2·1 g. (grs. 32)	*A. kochi*

* In each case one dose of drug was given 30 minutes prior to feeding mosquitoes.

TOXIC SYMPTOMS.

Of the 50 patients treated with atebrin, two complained of headache and four of abdominal pain. Headache in the supra-orbital region occurred on the sixth day of treatment in one case, and two days after a seven-day course of treatment had been completed in the other.

Abdominal pain was severe in three cases and mild in the remaining one. It was intermittent in character and lasted for some hours. The pain was unaccompanied by vomiting, and occurred in the epigastric region as early as the fourth day of treatment, and as late as the fifth day after treatment had been stopped. It was difficult to be sure, in all cases, that the headache and abdominal pains were due to atebrin, but there was reasonable certainty that the severe epigastric symptoms were caused by the drug.

In seven cases a yellow discoloration of the skin, whites of the eys, or both, was noted. This seemed to be due to a dyeing effect of the drug on the tissues and not to jaundice, for serum from such cases, when tested, did not show excess of serum bilirubin. The depth of colour of the skin varied from a faint yellow, occurring in six cases, to a more marked yellow in one case. This discoloration of the skin or scleræ made its appearance on the sixth to the ninth day (average eighth day—i.e., the day after treatment ceased), and remained for periods varying from 8 to 15 days, when the tissues regained their normal colour. All seven cases had received comparatively knowledge of the manner of growth and division of the elementary body will then be forthcoming.

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† Among the cases treated with quinine, the form of parasite occurring on relapse seems to deserve comment, for in all cases except two benign tertian parasites were found. Previously, Fletcher[2] in Malaya noted the frequency with which benign tertian parasites were present in the blood during a relapse, although when the patients first came for treatment other forms of parasite were found. Similar observations have been made in other countries; and the possibility that one species of malarial parasite becomes converted into another has been seriously considered as an explanation of these findings. As a more likely explanation, some authorities put forward the hypothesis that, in certain mixed infections, one species becomes predominant during the acute phase of the malarial attack and remains predominant for some time. If this may be accepted, the results given in the table above suggest that an unexpectedly large proportion of malarial infections in Malaya are mixed; but, during the acute phase, when the patient seeks treatment, one or other of the parasite species predominates and is the only one found; the other, or latent form of parasite, is probably sporulating quietly in a backwater of the blood stream, or occurs in such small numbers as not to be evident in thin or thick blood films. These latent forms may possess a greater resistance to the action of drugs or, by reason of their position in the body, may fail to be subjected to the drug in its usual concentration; either possibility would explain their tendency to appear on relapse.

SUMMARY.

(1) By high-speed centrifugalisation it has been possible to deplete Berkefeld filtrates of vaccinia virus almost entirely of their virus content and to recover the great bulk of the virus in deposits consisting in the main of Paschen bodies.

(2) Such deposits after repeated washings in saline retain their potency, while the saline menstruum in which the bodies are suspended has been entirely depleted of virus.

(3) In the light of these experiments the present status of the Paschen body is discussed, and the conclusion is reached from all the evidence now available that the cause of vaccinia is the Paschen body.

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A REPORT ON FIFTY CASES OF MALARIA TREATED WITH ATEBRIN.

A NEW SYNTHETIC DRUG.

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ATEBRIN, originally called erion, has been produced recently by the makers of plasmoquine. Its composition has not been divulged, and the properties of the drug are being investigated in Europe, Asia, and America. According to Schulemann,[1] atebrin is related chemically to plasmoquine, and both drugs have been evolved by using the structural formula of methylene-blue as a starting-point.

Dr. O. Urchs, of Calcutta, has kindly supplied details of preliminary tests made with atebrin in Europe, and has requested the Institute of Medical Research, Kuala Lumpur, to undertake an investigation concerning the efficacy of this new drug in the treatment of malaria. Atebrin was received in the form of tablets, each of which was said to contain 0·1 g. of the drug. The dosage recommended was about one-sixth that of quinine. The drug is somewhat bitter to taste and is readily soluble in water, producing in it a bright yellow colour. Unlike plasmoquine, and like quinine, atebrin shows fluorescence in high dilution under ultra-violet radiation.

An inquiry regarding the properties of this drug is still proceeding. So far, 50 cases of malaria have completed seven days' treatment with atebrin. Subsequently, the patients have been kept under daily observation as long as possible. The 50 cases mentioned comprised 16 benign tertian, 24 subtertian, and 10 quartan, and consisted of male Tamils, Chinese, and Sikhs whose ages ranged from 6 to 50 years. The majority gave a history of repeated attacks of malaria occurring over a period of six months or more; 46 similar individuals, suffering from malaria, were treated for seven days with quinine bihydrochloride, grs. 30 daily, in the form of a mixture. These control cases were used for comparison in all particulars. Fuller details, such as the degree of infection, method of treatment, &c., regarding both series of cases, are given later.

COMPARISON OF PARASITOCIDAL PROPERTIES.

Thick blood films from each case were examined daily. In both the atebrin and quinine-treated cases the asexual parasites disappeared from the blood, as a rule, within the seven-day treatment period, but quartan gametocytes tended to persist after the seventh day, later to disappear; while in the subtertian cases the gametocytes seemed unaffected by the drugs. For this reason the findings regarding quartan and subtertian gametocytes are omitted from Table I., which compares the average period of persistence of all parasites in the benign tertian cases and of the asexual parasites only in the subtertian and quartan series.

TABLE I.—*Parasitocidal Properties Compared.*

		Quinine bihydrochloride grs. 30 daily (2·0 g.) *for 7 days.*		Atebrin grs. 3 to 6 daily (0·2 to 0·4 g.) for 7 days.	
		Cases.	Days.	Cases.	Days.
Blood parasites.*	B.T.	17	3·6	16	2·4
	S.T.†	9	2·8	24	3·5
	Q.†	20	5·8	10	4·4

* Average number of days parasites persisted in the blood (thick films), including day when treatment commenced.
† Denotes trophozoites and schizonts only.

With regard to the rate of destruction of malarial parasites in the blood, atebrin appears to compare very favourably with quinine in the treatment of benign tertian and quartan malaria. The trophozoites of *P. falciparum*, however, persisted longer among the atebrin-treated cases.

COMPARISON OF THE DURATION OF THE FEBRILE PERIOD.

The temperature of each patient was taken every four hours, and the hour when treatment commenced was noted on the temperature chart. The duration of the febrile period was estimated from the time when the first dose of the drug was given, to the time when the temperature ceased to rise to 99° F. or over. In some cases,[*] despite the presence of large numbers of parasites in the blood, the temperature remained below 99° F., and these cases are omitted from Table II.

TABLE II.—*Duration of the Febrile Period.*

		Quinine bihydrochloride.		Atebrin.	
		(Same dosage as Table I.)			
		Cases.	Hours.	Cases.	Hours.
Fever* ..	B.T.	12	30	14	33
	S.T.	8	30	20	34
	Q.	12	58	10	43

* Average period of persistence of fever (temp. 99° F. or over) from commencement of treatment.

RELAPSE AFTER TREATMENT.

The term relapse is used, in this instance, to denote the reappearance of parasites in the blood, with or idity to prevent mosquitoes becoming infected m benign tertian cases within three or four days er treatment commences. Among gametocyte riers of *P. falciparum* neither atebrin nor quinine y be regarded as an efficient drug in preventing infection of mosquitoes which have access to such tients under treatment.

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[*] Patients who are infected with malarial parasites but who remain afebrile for long periods without treatment are not infrequently encountered in Malaya. Some of them exhibit an extraordinary degree of tolerance to the presence of comparatively large numbers of malarial parasites in the blood.

5. The optimum dosage of atebrin for all forms of laria is probably 0·1 g. per 15 kg. body-weight r day, given for a period of six to seven days. eatment should be preceded by preliminary purga- n, and it is suggested that the urine should be amined for the presence of the drug each day in cases under treatment. Late appearance of the ug in the urine may be taken as an indication that e drug is accumulating in the body in greater ncentrations than desirable, and this may give se to discoloration of the skin or scleræ.

6. If the cost of treatment with atebrin compares vourably with that of quinine, this new drug sumes an added importance, particularly if it is own definitely to be more effective than quinine preventing relapses when used for short courses of eatment. Atebrin thus deserves full and wide- read investigation, but final opinion regarding its neral use in malaria and its toxicity should be ithheld pending completion of such investigations.

I am indebted to Dr. A. Neave Kingsbury, Director f the Institute for Medical Research, F.M.S., for ermission to undertake the investigation and to ublish this paper. Dr. O. Urchs, of Calcutta, has indly supplied large quantities of atebrin, together ith details of preliminary tests made in Europe. am also indebted to Dr. W. E. Diamond for the rivilege of treating with this new drug cases of alaria admitted to the District Hospital, Kuala umpur.

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THE TREATMENT BY MARMITE OF MEGALOCYTIC HYPERCHROMIC ANÆMIA

OCCURRING IN IDIOPATHIC STEATORRHŒA (CŒLIAC DISEASE).

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IN an investigation of a group of 15 cases of idiopathic steatorrhœa (cœliac disease) associated with tetany and often with bone deformities[1] two were found to have a hyperchromic megalocytic type of anæmia. In view of the observation of Wills[32] that marmite was as effective as liver extract in the treatment of tropical megalocytic anæmia, it was decided to test its effect in the present cases. The nature and significance of the response obtained by such treatment form the subject of this paper.

INTRODUCTION.

Gee[10] in his original description of cœliac disease states that "cachexia, a fault of sanguification betokened by pallor and a tendency to dropsy, is a constant symptom." Subsequent observers have shown that the blood picture may be extremely variable, depending presumably upon which of the factors essential for hæmopoiesis are lacking. There may be no abnormality.[1, 9, 16] The majority of cases show a hypochromic anæmia,[9, 13, 25, 28] but 20 cases with a hyperchromic megalocytic anæmia have been reported, and we have a small group with an erythroblastic type of anæmia now under observation.[1]

The recorded cases of megalocytic hyperchromic anæmia in which full blood counts are available are shown in the Table. In addition, Rossier[23] has described three cases in adults of pernicious anæmia associated with diarrhœa, tetany, and disturbances of blood calcium, which were possibly cases of cœliac disease, especially as free hydrochloric acid was present in two. Witts[33] calls his case one of chylous diarrhœa, but since the patient is described as having "such scoliosis that his spine seems to have shrunken," the inclusion in the present group seems justified. The case described by Hampson and Shackle[14] was thought at the time to be one of renal dwarfism, but as her blood-urea was as low as 13 mg. per 100 c.cm. and a trace of albumin in the urine occurred on one occasion only, it is more likely that she was a cœliac dwarf, and she has therefore been included. Thaysen[28] states that 11 of his cases had at one time a hyperchromic anæmia, but no mention is made of the appearance of the red blood-cells. They are not therefore tabulated.

Two cases described by Schaefer[24] and Hegler[15] as non-tropical sprue are also not included, as, though they had severe steatorrhœa and a megalocytic hyperchromic anæmia, it is not clear that they had either tetany or disturbances of calcium metabolism associated with bone deformities.

CASE REPORTS.

CASE 1.—A married woman, aged 40 years (L. H., Reg. No. 40997/1930). All her life she has had attacks of diarrhœa with yellow offensive slimy motions and intervals of relative freedom. She improved when she was 7 years old, but became worse after her only child was born, 11 years ago. The attacks last about five days, when she passes about six stools a day. Between attacks the bowels are open three times daily and she may have to get up four times at night. The diarrhœa tends to become worse in warm surroundings. She first noticed cramps in her hands and feet in June, 1930.

On Feb. 18th, 1928, she was an in-patient under the care of Dr. A. M. H. Gray at University College Hospital for a persistent pustular dermatitis affecting the limbs, face, scalp, and to a less extent the trunk. A pure culture of *Staphylococcus aureus* was obtained from the lesions. She was treated by vaccines, iron, and arsenic, and a variety of liniments and proprietary foods containing vitamins.

On Feb. 22nd, 1930, she became an in-patient under the care of the Medical Unit at University College Hospital, when a diagnosis of pancreatic insufficiency was made. The total fat in the stools at that time was 71·2 per cent., of which 45·2 per cent. was neutral fat, and 26·0 per cent. fatty acid. The test-meal showed free hydrochloric acid. The red blood-cells were 4,000,000 per c.mm.; hæmoglobin, 68 per cent.; colour-index, 0·85; white blood-cells, 4200 per c.mm.

On June 9th, 1930, she was admitted to the London Hospital complaining of diarrhœa and cramps in the hands and feet. Appetite excellent.

Clinical examination.—Weight 7 st. 2 lb. Height 5 ft. 1¾ in. A pale thin woman, with a dry skin and seborrhœa of the right eyebrow. There was no bone deformity. The Chvostek and Trousseau signs were positive. Slit-lamp examination showed fine scattered opacities throughout the large doses of the drug (0·4 g. daily), and in all the excretion of the drug was found to be delayed; that is, it first appeared in the urine from the sixth to the thirteenth day (average eighth day), whereas, in cases showing no tinting of the skin or scleræ, the urine generally showed the characteristic colour of atebrin about the third or fourth day.

Atebrin did not appear to give rise to albuminuria, and in two cases of quartan malaria an initial albuminuria disappeared during administration of the drug.

GENERAL.

Notes on patients investigated and methods used.—Further details regarding the patients under treatment are given in Table V.

TABLE V.

		Quinine-treated cases.	Atebrin-treated cases.
Age	Range ..	18 to 45 years ..	6 to 52 years
	Average ..	29 „ ..	29 „
Body-weight	Range ..	88 to 133 lb. ..	39 to 144 lb.
	Average ..	108 „ ..	105 „

		Cases.	T.	S.	G.	Cases.	T.	S.	G.
M.I.*	B.T.	17	5,841	1,000	333	16	5,426	107	184
	S.T.	9	54,371	0	60	24	23,709	50	84
	Q.	20	2,579	1,136	128	10	3,028	480	89

* M.I. = Average degree of malarial infection on first day of treatment, expressed as numbers of trophozoites, schizonts, and gametocytes per c.mm. of blood.

The patients were isolated in a special ward and were examined twice daily during the period of treatment and observation. Treatment was preceded by routine purgation. The drugs were given twice daily and, when the patients received 0·3 g. of atebrin each day, 0·2 g. was given in the morning and 0·1 g. in the evening. Every precaution was taken to see that the drugs were actually swallowed and were not vomited subsequently. The temperature was taken every four hours, and the following observations were made daily: Spleen measurements, hæmoglobin percentages (Dare), and counts of the numbers of parasites in thick blood films, using the fowl-corpuscle method (Sinton [3]). Each patient was weighed daily, and the urine was examined each day for the presence of albumin, quinine, and atebrin.

Urine tests.—In the information accompanying the supply of atebrin it was stated that "by means of ether atebrin can be extracted from urine which has been rendered alkaline, and if the residue resulting from the evaporation of ether is dissolved in concentrated sulphuric acid this assumes a yellow colour, strongly fluorescent." It was found, however, that among patients taking atebrin the characteristic yellow colour of the drug became apparent in the urine by rendering it acid and heating it. This colour was best seen by viewing the urine in the test-tubes from above downwards. Although this was not so delicate a test as the ether extraction mentioned above, daily observations on the urine of atebrin-treated cases showed that the drug appeared in the urine about the third or fourth day after treatment commenced, but could still be detected by this rough test up to the eighth or ninth day after treatment had ceased. These observations seem to indicate that the drug tends to accumulate in the body and to be excreted slowly.

When dissolved in water the yellow colour of atebrin persisted up to dilutions of 1 in 102,000; luminescence under ultra-violet radiation was still apparent in dilutions of 1 in 818,000, while precipitation with Mayer's reagent occurred up to dilutions of 1 in 409,000. The urine of patients taking atebrin did not, however, show precipitation with Mayer's reagent, although showing the yellow colour of atebrin.

It was thought that ultra-violet light might be of use in detecting small quantities of atebrin in urine. This, however, was a failure, for it was found that all specimens of urine, from normal and untreated individuals, contained substances which glowed under ultra-violet light, and these substances interfered with the detection of drugs that were similarly luminescent.

Dosage of atebrin.—Table VI. shows the dosage used among the 50 cases mentioned.

TABLE VI.

Daily dose.	Patients treated.			Remarks.
	B.T.	S.T.	Q.	
				Dose regarded as—
0·2 g.	4	4+1 (boy)	2	Too small for adults.
0·3 g.	6	8	5	Adequate for adults.
0·4 g.	6	11	3	Too large for adults.

The inclusion in Tables I. and II. of ten adults treated with 0·2 g. atebrin daily, which is regarded as an inadequate dose, has tended to prolong the average period of persistence of parasites in the blood, also the duration of fever, as shown in these Tables.

The patients receiving atebrin treatment had an average body-weight of 105 lb. (about 48 kg.), which is below the average body-weight of Europeans. It is concluded, from the results observed among the cases treated with daily doses of 0·3 g., that the optimum dose of atebrin for all forms of malaria is probably 0·1 g. per 15 kg. body-weight per day for a period of six to seven days. At the end of this period a good deal of the drug has accumulated in the body and continues to be excreted for a further period of seven days or longer. The malarial parasites are thus probably subjected to the action of the drug for a longer period than the actual period of administration.

General progress of patients.—The two series of cases, treated with atebrin and with quinine, showed similar favourable progress as regards increase in hæmoglobin percentage and body-weight, also in the rate of reduction in the size of the spleen.

SUMMARY AND CONCLUSIONS.

1. Notes are given on 50 cases of malaria treated with atebrin, a new synthetic drug evolved by the makers of plasmoquine. Forty-six cases treated with quinine bihydrochloride were used as controls.

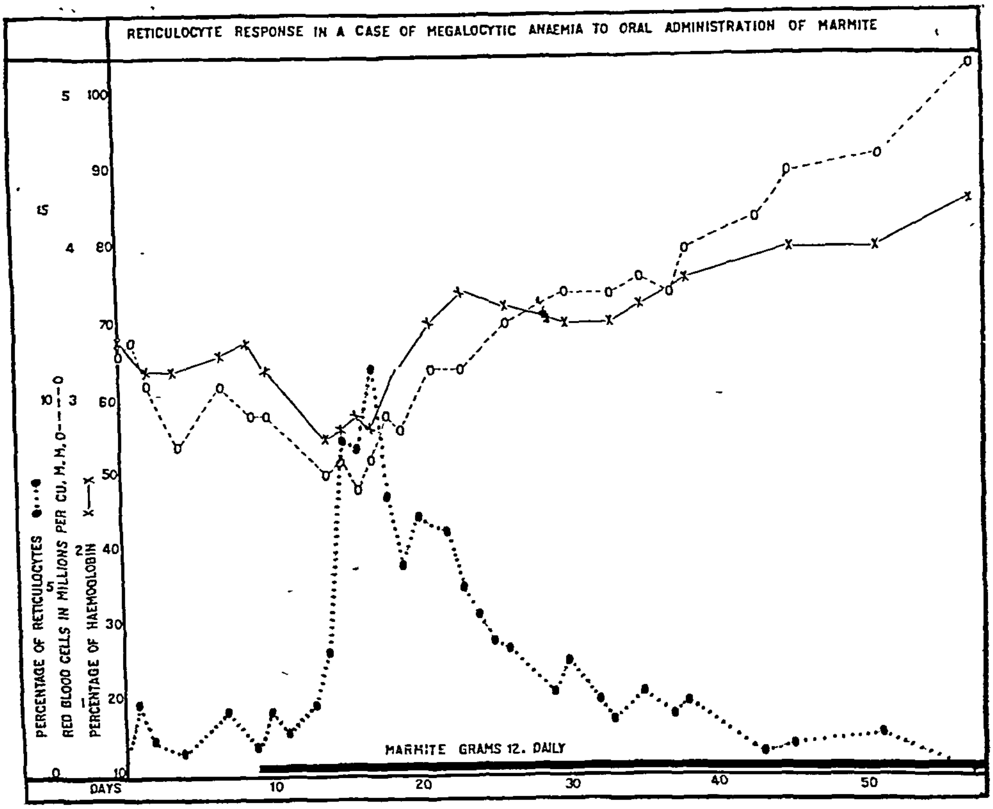
2. Atebrin compares favourably with quinine in ridding the blood of malarial parasites and in relieving symptoms. So far it seems superior to quinine in preventing relapses.

3. Atebrin is not unpleasant to take, but in a small proportion of cases it gives rise to abdominal pains. Where comparatively large doses are used, and excretion of the drug is delayed, a yellowish discoloration of the skin appears, which may remain from 8 to 15 days.

4. Atebrin, like quinine, does not affect the viability of the gametocytes of *P. vivax* or *P. falciparum*. Its use, however, over a period of seven days or less destroys the gametocytes of *P. vivax* with sufficient

e fingers, and in some attacks the thumb gets stiff and
ed into the palm. Such attacks are very awkward,
have interfered with her study of music, especially
ing the piano.
inical examination (May 6th, 1931).—Weight 7 st. 4 lb.
ght 5 ft. 1 in. Pale skin and mucous membranes, slight
ar flush.
re was no
e deformity.
ll adenoma,
m. diameter,
isthmus of
roid. Chvo-
sign nega-
. Trousseau
positive.
rt and lungs
mal. Blood
ssure 130/90.
derate disten-
of abdomen,
tenderness.
pecial exam-
tions.—Urine
mal. Stools:
e, porridgy;
al fat, 35·6 per
t.; unsoaped
, 16·5 per cent.
occult blood.
st-meal: free
l, 0·16 per
nt.; total
idity, 66.
rum calcium,
mg. per 100
m. Plasma
osphorus, 2·5
g. per 100 c.cm.
lcium balance:
e calcium out-
t was esti-
ated in the
ine for three
ree-day periods.
he patient was
ept on a weighed
iet of known
w calcium con-
nt. The calcium
utput in the
rine was much
ss than in the
ormal (0·03 g.)
adiograms of bones: a controlled radiogram of the right
and showed a slight uniform diminution of calcification
Dr. Stephen Montgomery). Blood count: red blood-cells,
,500,000 per c.mm.; hæmoglobin, 55 per cent.; colour-
ndex, 1·1; white blood-cells, 4400 per c.mm.; polymorphs,
0 per cent.; lymphocytes, 66 per cent.; eosinophils,
per cent.; large mononuclears, 3 per cent. Wassermann
eaction negative.

FIG. 2 (Case 1).



Progress under treatment.—She was given a low fat, high calcium diet, with the addition of calcium lactate (10 g.) and two tablets of Radiostol (British Drug Houses) daily. There was immediate improvement of the diarrhœa, and she began to pass only two stools a day. The tetany disappeared. Iron in large doses was given, but the anæmia remained unaltered for six months.

On Dec. 29th, 1931, she was admitted to a nursing home for intensive treatment of the anæmia.

Clinical examination.—Weight 6 st. 13 lb. Pale skin with malar flush and slight icteric tinge of conjunctivæ. Tongue raw with red edges. (To a direct question she answered that her tongue had often been sore.)

Special examinations.—Stools: total fat, 18·7 per cent.; unsoaped fat, 11·8 per cent. Sugar-tolerance test: fasting blood-sugar, 0·054 per cent.; blood-sugar after 50 g. glucose by mouth—in 40 minutes 0·076 per cent., in 80 minutes 0·075 per cent., in two hours 0·083 per cent., no glycosuria throughout. Serum calcium, 9·7 per mg. per 100 c.cm. Plasma phosphorus, 3·5 mg. per 100 c.cm. Plasma phosphatase, 0·182. Blood count: red blood-cells, 2,500,000 per c.mm.; hæmoglobin. 52 per cent.; colour-index, 1·01; white blood-cells, 2400 per c.mm.; polymorphs, 39 per cent.; lymphocytes, 58 per cent.; eosinophils, 1 per cent.; large mononuclears, 2 per cent.; reticulocytes, 1·7 per cent.; platelets scanty, great anisocytosis, no poikilocytosis. The mean diameter of the red blood-cells was 8·115 μ, the variability 11·7 per cent, and there was a megalocytosis of 37·2 per cent. giving a curve compatible with a diagnosis of pernicious anæmia (Fig. 3). The indirect van den Bergh reaction was 0·75 van den Bergh units.

TREATMENT.

In order to simplify the conditions of the experiment as far as possible during the initial period the patient was given no red meat, and no fresh fruit or green vegetables. Chicken once a day was allowed. To this was added 12 g. of marmite, usually taken cold. This was much disliked at first, but was soon tolerated. Daily blood observations were made. The reticulocytes started to rise on the sixth day, reaching a maximum of 17·2 per cent. on the eleventh day, and then falling slowly to normal. This was followed by a rapid rise in both red blood-cells and hæmoglobin (Fig. 4). Thirty-nine days later the red blood-cells were 4,000,000 per c.mm., hæmoglobin 78 per cent., colour-index 0·9. The indirect van den Bergh reaction was 0·2 van den Bergh units. Progress has continued, and the red blood-cells are now 5,200,000 per c.mm., hæmoglobin 88 per cent., colour-index 0·84. There is still a leucopenia, the white blood-cells being constantly between 2000 and 3000 per c.mm. The striking hæmatological improvement was accompanied, as in Addisonian pernicious anæmia, by an increased sense of well-being and by a gain in weight[29]—1 st. 3 lb. in 10 weeks, in spite of occasional attacks of diarrhœa lasting one to two days.

CHARACTER OF THE ANÆMIA.

Both cases showed a hyperchromic megalocytic anæmia similar to other reported cases. There was a striking absence of poikilocytosis, as was also noted by Blumgart[2] and Holmes and Starr.[16] The van den Bergh indirect reaction was low, varying between 0·5 and 0·75 van den Bergh units. Holmes and Starr also record a negative reading in the only one of their cases in which the examination was made, and lens; a few in the fœtal nucleus (Mr. C. Goulden). She was deaf, and examination of the ears showed bilateral adhesive catarrh of both Eustachian tubes with fibrous ankylosis of the left ossicles and two perforations of the left tympanum. The heart and lungs were normal. B.P. 110/70. There was slight distension of the abdomen. The liver was palpable 3 cm. below the costal margin on inspiration.

Special examinations.—Urine normal. Stools pale and porridgy in consistency. Total fat, 75·8 per cent.; unsoaped fat, 67·4 per cent. Serum calcium, 8·4 mg. per 100 c.cm. Plasma phosphorus, 3 mg. per 100 c.cm. Plasma phosphatase, 0·283. Test-meal: free hydrochloric acid, 0·27 per cent.; total acidity, 80. Blood count: red blood-cells, 4,000,000 per c.mm.; hæmoglobin, 62 per cent.; colour-index, 0·76; white blood-cells, 4800 per c.mm.; polymorphs, 67 per cent.; lymphocytes, 24·5 per cent.; eosinophils, 4 per cent.; large mononuclears, 4·5 per cent. Wassermann reaction negative. Urine normal.

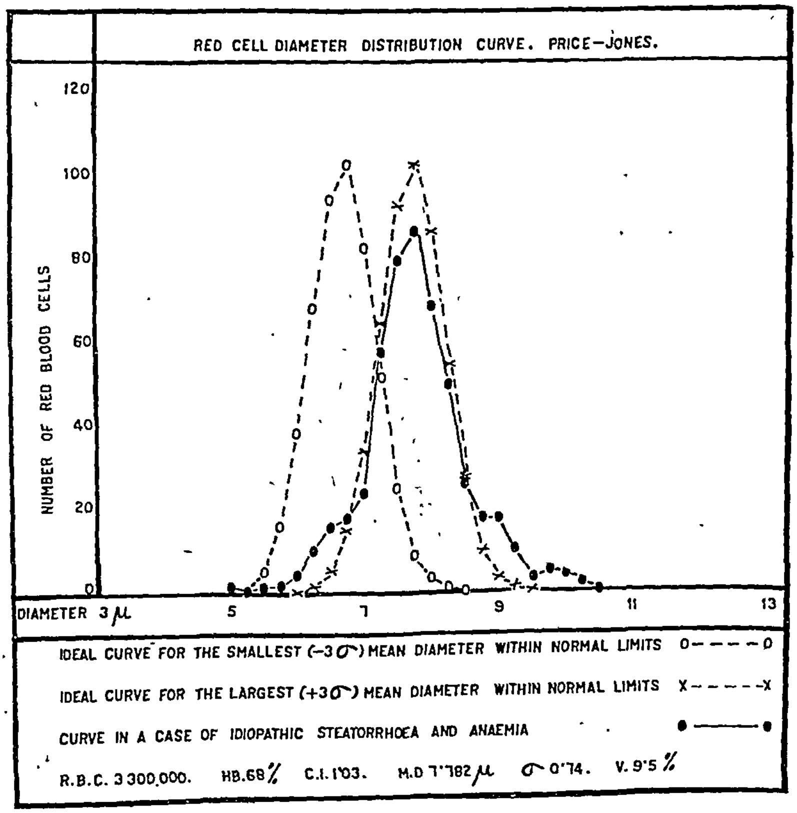
Course.—She improved on a low fat, high vitamin diet, together with calcium lactate 10 g. daily.

On Jan. 21st, 1931, she was readmitted to the London Hospital complaining of diarrhœa, weakness, dyspnœa, and palpitation.

Clinical examination.—Weight 7 st. 6 lb. Chvostek sign positive. Trousseau sign negative. Slight icteric tinge of conjunctivæ. Tongue smooth, papillæ pale and atrophic. Soft, light brown hair, with a tendency to silver grey. Skin dry. Large moist red abraded areas from 2 cm. to 8 cm. diameter on all limbs, and to a lesser extent on trunk. Many of these lesions showed scaly brown pigmented borders. One lesion on the left calf showed a deep brown scaly periphery and a moist red abraded centre.

Special examinations.—Stools: total fat, 39·8 per cent.; unsoaped fat, 15·6 per cent. No amœbæ or cysts seen in the stools. Agglutination reactions negative for typhoid and dysentery organisms. Blood-urea, 20 mg. per 100 c.cm. Sugar-tolerance test: fasting blood-sugar, 0·064 per cent.; blood-sugar after 50 g. of glucose by mouth—in 45 minutes 0·077 per cent., in two hours 0·08 per cent., no glycosuria throughout. Test-meal: free hydrochloric acid, 0·22 per cent.; total acidity, 80. Serum calcium, 8·4 mg. per 100 c.cm. Plasma phosphorus, 2·1 mg. per 100 c.cm. Calcium balance: the calcium output was estimated in the urine and fæces for three three-day periods. The patient was kept on a weighed diet of known low calcium content. The calcium output in the urine was much less than normal (0·04 g.); that in the fæces was double the normal (0·01 g.). Controlled radiograms revealed no abnormality in the bones examined. Examination by opaque enema showed a condition of megacolon in which four pints of barium sulphate were used, the whole colon being of poor tone and showing great enlargement of the lumen. Blood count: red blood-cells, 1,400,000 per c.mm.; hæmoglobin, 62 per cent.; colour-index, 1; white blood-cells, 3200 per c.mm.; polymorphs, 63 per cent.; lymphocytes, 27 per cent.; eosinophils, 3 per cent.; large mononuclears, 7 per cent.; severe anisocytosis, punctate basophilia, poikilocytosis. Indirect van den Bergh reaction, 0·1 mg. per 100 c.cm.

FIG. 1 (Case 1).



Course.—There was a rapid response to liver extract therapy, the reticulocytes reaching a level of 18·5 per cent. and the total red cell count 4,300,000 per c.mm. The patient did not take the liver extract regularly, and the anæmia relapsed. She was therefore readmitted for intensive treatment of the anæmia on Dec. 18th, 1931. Blood count: red blood-cells, 3,300,000 per c.mm.; hæmoglobin, 68 per cent.; colour-index, 1·03; white blood-cells, 2400 per c.mm.; polymorphs, 56 per cent.; lymphocytes, 39·5 per cent.; eosinophils, 3 per cent.; large mononuclears, 1·5 per cent.; platelets scanty, anisocytosis, no poikilocytosis, mean diameter of red cells, 7·782 μ; just larger than the largest calculated normal mean of 7·718 μ. The variability was 9·5 per cent. and there was 8·8 per cent. megalocytosis. The Price-Jones curve is shown in Fig. 1. The indirect van den Bergh reaction varied between 0·5 and 0·75 van den Bergh units. Urobilinogen not in excess in the urine

TREATMENT.

She was given a high calcium diet which contained meat and green vegetables and, in addition, 12 g. of marmite daily. Radiostol and calcium lactate were discontinued, to obtain as far as possible a pure marmite effect. Daily blood examinations were made. The reticulocytes started to rise on the sixth day, reaching a maximum of 10·8 per cent. on the ninth day, and then falling slowly to normal (Fig. 2). The red blood-cells and hæmoglobin rose steadily, the red blood-cells reaching a level of 4,000,000 per c.mm. 25 days after treatment was begun. They are now, 5,000,000 per c.mm., and the hæmoglobin is constantly in the neighbourhood of 80 per cent., while the indirect van den Bergh reaction is 0·25 van den Bergh units. The diarrhœa and tetany which previously had been controlled became extremely severe after radiostol and calcium were omitted, but despite this there was a gain in weight, and the improvement in the blood picture was no slower than in Case 2, where diarrhœa was not severe. The significance of this observation is discussed later.

CASE 2.—A single woman of 22 years, seen in consultation with Dr. D. S. Campbell, of Grimsby.

Clinical history.—She was an only child, and since babyhood had always had loose stools. They were pale, but not bulky or offensive. No blood or mucus was ever passed. She never had the energy to play games. Three years ago she began having attacks of diarrhœa every two weeks, when she passed as many as eight motions a day. She does not dare to drink hot food for fear of precipitating an attack. Unrelated to the diarrhœa she gets tingling and numbness.

REPORTED CASES OF MEGALOCYTIC HYPERCHROMIC ANÆMIA ASSOCIATED WITH CŒLIAC DISEASE.

Author.	Age in years.	Sex.	Date.	Red blood-cells (thous. per c.mm.)	Hæmoglobin %.	Colour-index.	White blood-cells per c.mm.	Megalocytosis.	Anisocytosis.	Poikilocytosis.	Indirect van den Bergh reaction.	Test-meal.	Treatment.	Remarks.
ischer, Hotz, Hablützel-Weber.	4½	F	—	1140 550	30 10	1·57 1·0	5400 ..	+ ..	+ ..	.. ..	S.sc.	—	Iron. Intramuscular blood.	Bronchitis; p.-m. diag.: pernicious anæmia.
Hotz, Hablützel-Weber.	9½	F	22/10/22 22/2/23 8/5/23	3900 554 3700	48 8 41	0·61 0·8 0·55	6500 2780 8000	.. + ..	.. + ..	.. + ..	.. .. ..	Free HCl. No free HCl.	Arsenic. Blood transfusion.	Fever: pyelitis.*
Lehndorff and Mautner.	3	F	—	1400 550	30–40 10	.. 1·34	5400 ..	.. +	.. +	.. ..	.. ..	—	—	p.-m. diag.: pernicious anæmia.
Same authors.	1½	—	—	5200 540	55 8	0·52 0·8	.. ..	.. +	.. +	.. ..	.. ..	—	—	Fever; cardiac murmurs. Recov.
Fanconi.	12	M	—	1600 4750	30 74	1·17 0·98	7000 4900	+ —	.. ..	.. ..	.. +	Free HCl.	Iron and arsenic.	—
Blumgart.	42	M	—	2900	65	1·26	5000	+	+	—	..	Free HCl absent.	—	p.-m.; not typical of pernicious anæmia.
„	32	M	—	2050	60	1·5	3800	+	+	—	..	Free HCl absent.	—	
Holmes and Starr.	34	M	—	1790 4140	59 80	1·5 0·97	5950 6100	++	+	—	..	Free HCl.	Trypsin, diastase, cod-liver oil, yeast, &c.	—
Same authors.	53	F	—	915 4500	30 80	1·6 0·88	2125	++	+	—	—	Free HCl absent.	Liver, fruit, cod-liver oil.	—
Same authors.	54	M	—	2600 4970	53 80	1·0 0·81	3700 6500	+	+	—	..	Free HCl.	Liver, fruit, cod-liver oil.	—
Hampson and Shackle.	16	F	—	3420	54	0·8	4700	8·51 μ	..	..	+	—	—	—
Holst.	33	F	—	1320	39	1·5	4000	8·5 μ	..	..	+	Free HCl.	—	—
Witts.	62	M	—	2500	55	1·1	3400	+	+	..	..	Free HCl after lavage.	Liver.	Improved.
Thaysen.	43	M	16/8/24 16/8/25 20/1/26	4200 2800 4700	82 86 71	0·9 1·4 0·8	6000 9800 ..	.. + ..	.. + ..	.. .. ..	.. .. ..	—	—	—
„	58	F	26/2/26 21/10/28 31/10/29	1640 4800 2400	53 81 68	1·6 0·8 1·4	3200 6000 3600	.. .. +	+ .. +	.. .. ..	.. .. ..	—	—	—
„	49	F	1912 20/5/23 1928	4600 1100 4500	58 30 70	0·6 1·4 0·8	6000 5000 6500	.. + ..	.. + ..	.. + ..	.. .. ..	—	—	—

S.sc. = Subicteric sclerotics. * Blood picture described by Adler as pseudo-pernicious anæmia of children.

should be facilitated, it appears more reasonable to conclude that marmite supplies or enables the body to prepare some principle essential to normal bone-marrow activity. These observations also suggest that marmite exerts its action upon the disordered hæmopoiesis alone, since other symptoms were unaltered.

RELATIONSHIP OF MARMITE TO THE PRINCIPLE IN LIVER EFFECTIVE IN PERNICIOUS ANÆMIA.

Marmite was without effect upon the hypochromic and erythroblastic types of anæmia occurring in association with cœliac disease.[1] Presumably, therefore, it exerts a specific action, as does the effective principle in liver upon some failure of hæmopoiesis resulting in a megalocytic anæmia. Such a statement raises the question of its relationship to this principle.

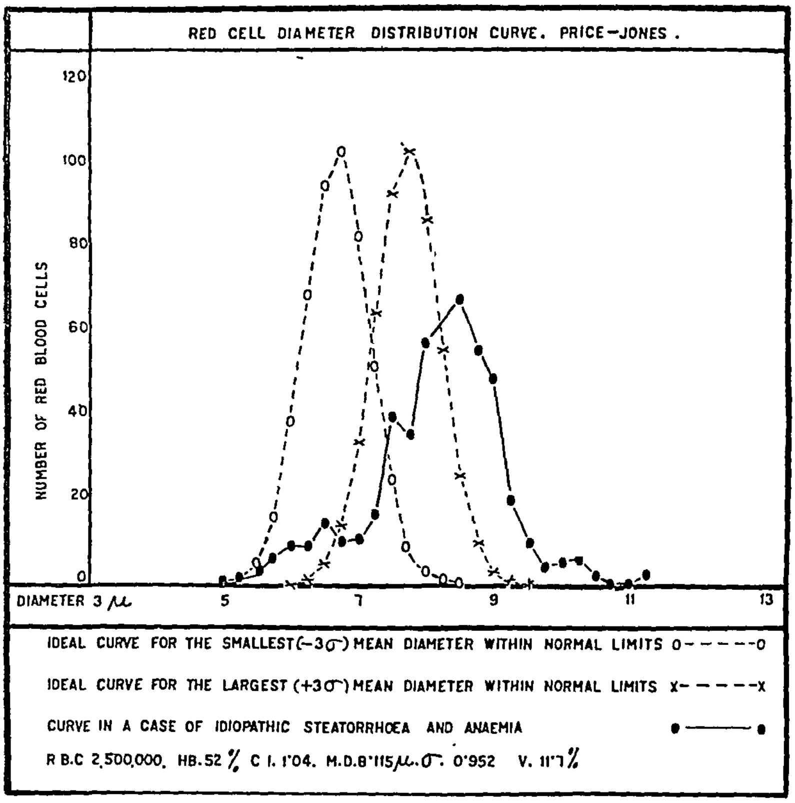
Case 1 had previously responded to liver extract with complete recovery of her anæmia. Two of the cases reported by Holmes and Starr[16] recovered when whole liver was given in addition to other therapeutic measures. The case reported by Witts[33] also improved on liver extract, which suggests that probably a factor common to both liver extract and marmite is involved. Marmite is a complex substance prepared commercially from yeast. It contains, therefore, all the constituents of the vitamin B complex, and small amounts of such things as celery seeds added for flavouring purposes. Liver extract is also rich in vitamin B.[11] Experimental evidence, however, as to the effect of the vitamin B complex upon hæmopoiesis is conflicting,[12 26 27] whilst clinically anæmia is not invariably associated with either of the conditions due to lack of vitamin B. If anæmia occurs in beri-beri[19] or pellagra,[3] it is almost invariably hypochromic in character.

Marmite, however, is useless in the treatment of Addisonian pernicious anæmia,[6] which suggests that though the substances effective in the treatment of the two anæmias are both present in liver extract they are not identical. It is clear that until further work has been done it is impossible to determine which element in marmite is concerned in hæmopoiesis, *and how it is related to the principles in* liver extract.

RELATIONSHIP OF THE ANÆMIA TO DIARRHŒA.

Diarrhœa.—Castle[5] and his co-workers in discussing the part played by disorders of the digestive tract in the ætiology of anæmia conclude "in general

FIG. 3 (Case 2).



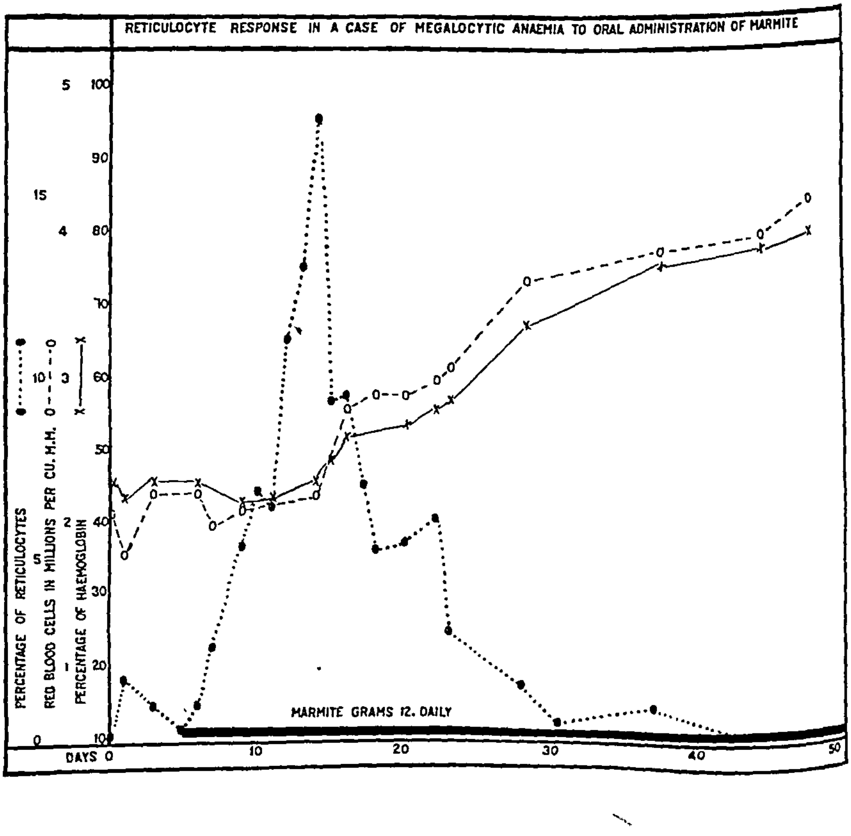
no comment is made except by Vischer[30] upon the presence of jaundice. Free hydrochloric acid was present in the gastric juice in both cases, and occurred in four of the nine reported cases where a fractional test-meal was done. Thaysen[28] believes that changes in the character of the anæmia occurring in the same patient are peculiar to cœliac disease. He, however, makes no attempt to correlate his blood findings with the effect of treatment. It is well known that certain cases of Addisonian anæmia require iron before the blood picture becomes normal, and also that spontaneous remissions occur without any treatment. The most dramatic changes in cœliac disease have been reported in children in association with sepsis, but again sepsis will precipitate a relapse in Addisonian anæmia. The anæmia, therefore, is in no way peculiarly polymorphic.

RESPONSE TO MARMITE.

In both cases the response of the anæmia to marmite was as dramatic as that obtained by the administration of liver extract in the treatment of Addisonian pernicious anæmia. Minot[22] and his associates have shown that in the latter, if maximum amounts of potent material are given, no serious complications being present, the height of the reticulocyte rise is inversely proportional to the level of the red blood-cells before treatment. In both cases the maximum reticulocyte level was in close accord with that calculated, suggesting that an adequate dose was given. In order to study its action uncomplicated by other drugs radiostol and calcium lactate were not given to Case 1. The blood picture returned to normal, and some weight was gained, though both the diarrhœa and tetany were severe until controlled by other means.

Theoretically marmite might exert its action either by favouring the absorption of, or actually supplying, some factor essential to hæmopoiesis. The blood-sugar curve in both cases, however, retained its characteristic flattened form despite recovery from the anæmia, and as long as radiostol was withheld, severe tetany and diarrhœa continued in Case 1. It is clear, therefore, that absorption of other essential substances is unaffected; and, since it is difficult to understand why the absorption of one factor only

FIG. 4 (Case 2).



CLINICAL AND LABORATORY NOTES

A CASE OF CEREBRAL TUMOUR.

BY F. CLAYTON, M.D. CAMB., M.R.C.P. LOND.,

ON. PHYSICIAN TO THE WARNEFORD HOSPITAL, LEAMINGTON.

ON July 25th, 1930. A. B., aged 22, was indulging n a day by the sea. He spent a good deal of the day in the water, but even more in sun-bathing on the eashore. In the afternoon he had a sudden attack of pain in the head, severe enough for him to consult a doctor, by whom the diagnosis of "heat-stroke" was made. From this time until admission to the Warneford Hospital six weeks later the headache never left him and it began to be associated with vomiting every morning and at varying times in the day. He also complained of double vision on looking to the right, five days before he came into hospital.

On admission he seemed in great pain, referred chiefly to the back of the head; he was quite sensible and showed no drowsiness. His right pupil was smaller than the left; both reacted to light and accommodation. No nystagmus. Right external rectus muscle weak. Tongue protruded slightly to the right. No facial weakness. No loss of power or loss of sensation in trunk or limbs. Deep reflexes all brisk and equal. Abdominal reflexes present; right lower abdominal definitely diminished. Plantar responses flexor.

Radiography of the skull revealed no abnormality. Ophthalmoscopic examination of the fundus oculi showed papillœdema of both discs, especially on the right side. The ears showed no evidence of anything pointing to intracranial sepsis. The cerebro-spinal fluid was under great pressure; there was no excess of protein, and the cell count was normal. The Wassermann reaction in cerebro-spinal fluid and blood was negative.

On Sept. 10th, 1930, a right subtemporal decompression was performed by Mr. Gordon Dingley. The trephine opening was enlarged to a diameter of three inches and on incising the dura the brain bulged through it under great pressure. The brain was explored but no tumour was discovered and the wound was closed. On the 11th headache and vomiting disappeared. On the 17th the decompressed area was bulging considerably and pulsating freely. No symptoms. On the 26th the patient was discharged with a large "hernia cerebri." There seemed to be some left facial weakness. The mental condition had become rather strange. It was then decided to use radium and on Oct. 13th, 1930, a Columbia paste helmet with 64 mg. was applied. The hernia was very tense at this time. The helmet was worn for 18 hours daily for a fortnight. The total amount was 19,406 mg. hours. On discharge from the hospital there was little change in the size of the tumour.

On Oct. 31st, however, it was softer and smaller, and on Nov. 20th it had disappeared.

From that time the condition of the-patient has steadily improved, and he is now able to carry on his ordinary work.

He has no headache and has completely normal vision. The optic discs are clear. The origin of the tumour and its nature are necessarily unknown. From the man's story there seems no doubt that his symptoms resulted from exposure to the sun. Similarly from clinical observation there is reasonable evidence for correlating the application of radium with the subsidence of the tumour.

DIHYDROMORPHINONE HYDROCHLORIDE (DILAUDID).

BY O. LEYTON, M.D. CAMB., D.SC., F.R.C.P. LOND.,

PHYSICIAN TO THE LONDON HOSPITAL.

THIS communication is in no way a clinical study of a comparatively new drug but has for its object its introduction to practitioners in Great Britain.

In THE LANCET of last year (1931. ii., 55) an article appeared entitled "The Heroin Habit" from which I may quote the following:—

> "The properties of heroin, which render it popular with some physicians, can in most if not all cases be efficiently replaced by other morphine drugs. For the relief of cough codeine is a valuable substitute. though not so strong as heroin; dicodid has as powerful an effect on the respiratory centre as morphine. though less than that of heroin, and its addiction properties are less pronounced than those of the latter drugs. For the relief of pain in patients in whom it is undesirable to act on the bowels, heroin is better than morphine but dilaudide offers the same advantages. This alkaloid has much the same type of effect on the respiratory centre as heroin but is weaker; it has about the same influence as heroin in its pain-relieving properties, and. like heroin, has little effect on the alimentary canal. Furthermore, the euphoric effects of dilaudide are weaker than those of both morphine and heroin as gauged by withdrawal symptoms."

There was a footnote that Profs. Dixon and Tiffeneau had had no experience of dilaudid.

This article aroused in me the desire to test the action of the drug upon some of my patients who were sorely in need of an analgesic. Since the preparation is a derivative of morphine, it is included in the list of substances controlled by the Dangerous Drugs Act, and therefore licences had to be obtained from the Home Office to permit importation of the drug by the London Hospital and a pharmaceutical chemist. These licences were granted without delay and I have now used the drug in a sufficient number of cases to permit me to arrive at a conclusion about its value as an analgesic but not to decide whether addiction develops.

The first case treated was one of thromboangiitis obliterans accompanied by severe pain which was not controlled by any of the many methods adopted, including injection of muscle extract, and necessitated injections of heroin four-hourly. I was faced with the dilemma and concluded that it was wiser to let a man of 75 develop a heroin habit rather than let him sink rapidly under fiendish torture. Heroin had been increased to gr. 1/6 four-hourly and since it was failing to give relief and a bigger dose of heroin may paralyse the respiratory centre morphine had replaced heroin and gr. ½ was being given at comparatively short intervals. Dilaudid gr. 1/30 replaced the morphine and gave relief for about four hours. The patient was quite willing that all the doses of morphine should be replaced except that given at 10 P.M. He stated that the dilaudid did not help him to sleep.

This patient had been under morphine and heroin for a comparatively short time. Another case seems to show that dilaudid cannot replace morphine when addiction has developed; for the patient who had a draining abscess of lung, and was taking morphine sulphate up to grs. 30 daily, was given dilaudid without any relief. A third case was that of a hospital nurse who suffered from tic douloureux. An injection of dilaudid relieved pain; it did not cause sleep but left her in a condition which allowed her to carry on her work.

The drug is not completely free from adverse effects, although nausea, when caused, lasts as a rule only a few minutes. One patient, however, a woman of about 60, who was suffering from severe pain due to arthritis deformans, vomited for twelve hours after an injection of dilaudid 0·002 g. This is the only case in which it has caused vomiting.

The drug failed to give relief in a case of what I believed to be "associated pain" or "memory pain."

I have used dilaudid in several dozen cases including pleurisy, sciatica, facial neuralgia, and angina pectoris with beneficial effects. Two cases it can be shown that patients with diarrhœa are more prone to develop anæmia than patients without diarrhœa." Thus Keefer[20] and his associates have recently found that the various types of anæmia which may be associated with tuberculous and dysenteric ulceration of the intestine improve when the diarrhœa is controlled. Lehndorff and Mautner[21] draw the same conclusion in the case of cœliac disease. A study of the present cases, however, suggests that the failure of hæmopoiesis is not dependent upon a deficiency brought about by loss of essential factors due directly to the diarrhœa, but rather to some associated but independent failure of absorption and digestion. Thus in Case 2 the diarrhœa was controlled for six months but the anæmia persisted until relieved immediately by the administration of marmite; while Case 1 was cured of her anæmia in spite of persistent diarrhœa. Certain cases with severe steatorrhœa, to be reported later,[1] have never shown any anæmia. Castle[6] and his co-workers have shown experimentally that such an associated but independent failure of digestion occurs both in chronic diarrhœa associated with intestinal anastomoses and in sprue.

RESPONSE OF OTHER SYMPTOMS TO MARMITE.

The pellagra-like skin lesions in Case 1 responded as dramatically as the blood picture to the administration of marmite. It is likely that this was due to the rich content of vitamin B_2. All other symptoms were unaffected.

RELATIONSHIP OF THE HYPERCHROMIC MEGALOCYTIC ANÆMIAS OF CŒLIAC DISEASE TO OTHER MEGALOCYTIC ANÆMIAS.

The question at once arises as to the relationship of this type of megalocytic anæmia to Addisonian pernicious anæmia and that occurring in sprue, in association with gastrocolic fistula, and in tropical anæmia. They are all hyperchromic anæmias with a marked shift of their red blood-cell distribution curve to the right of normal. They react to the effective principle in liver extract or its substitutes, and, except for a few atypical cases in children, fail to respond to iron. Addisonian pernicious anæmia differs from the others in the following ways:—

(1) The indirect van den Bergh reaction is always high, readings of from 2·0 to 5·0 van den Bergh units being common during a relapse.[7]

(2) Poikilocytosis is a feature of the stained film.

(3) Free hydrochloric acid is almost invariably absent from the gastric juice.

(4) The anæmia is unaffected by marmite.

In cœliac disease the indirect van den Bergh reaction is low. Similar low readings are recorded in sprue,[7] in tropical megalocytic anæmia,[31] and in anæmia associated with gastrocolic fistula.[8] The slight poikilocytosis of cœliac disease is also a feature of sprue[7] and tropical megalocytic anæmia.[31] Free hydrochloric acid is not infrequently found in all megalocytic anæmias other than Addisonian pernicious anæmia. Marmite has been shown to be effective in two cases associated with cœliac disease and in tropical megalocytic anæmia,[32] while it is valueless in the idiopathic form. It appears, therefore, that there is a large group of megalocytic anæmias, possessing certain features in common, which can be differentiated from Addisonian pernicious anæmia.

SUMMARY.

(1) Two cases of megalocytic hyperchromic anæmia associated with tetany and steatorrhœa are reported. (2) The anæmia was cured by the administration adequate doses of marmite, the other sympton being unaffected. (3) The anæmia appears to unrelated to the severity of the diarrhœa or oth symptoms. (4) The relationship of this type megalocytic anæmia to other megalocytic anæmi is discussed.

It is a pleasure to thank Dr. Price-Jones for kindness in determining the red blood-cell dist bution curves and the physicians of Universi College Hospital for permission to include abstrac from their notes in Case 1.

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GLASGOW LOCK HOSPITAL.—The annual rep shows that in 1931 the average number of pati resident nightly was 72, as against 58 in 1930, w the average sojourn of patients benefited was 64 d compared with 51 in the preceding year. The dispens attendances were 19,871, as against 19,919 in 1930. greater number in residence is attributed not to any incr of disease in the community, but rather to a chang attitude on the part of the persons afflicted, and also the part of the public. The old feelings of secret fear open distrust are stated to be giving way to feeling confidence and hope—and the policy of spreading knowle which the hospital is pursuing is held to have justi itself.

OPHTHALMIC HOSPITAL OF ST. JOHN IN JERUSAL The report for 1931 states that there was a ma increase in the number of in-patients. There were operations and 75,423 attendances of patients who, ever, gave no more than £3 (Palestine) as thank-offeri Endowments produced only £P925, but the expendi was £P5,329, the bulk of the difference being provided the Order of St. John. The hospital has complied with the "almost Utopian regulations for the installa *of sanitary systems*" connected with the municipal wa supply of Jerusalem, but since the gravitation suppl "available only for a few hours every fourth day" scheme which last year cost the hospital £P104 is "l more than a nuisance." Prices in the city have r substantially, fresh meat by as much as 12 per cent.

one time it had been discussed whether sprue and icious anæmia were a single entity. All sprue s passed through a megalocytic phase unless were cured before that phase was reached. es of sprue treated with liver extract showed definite and sustained improvement, He cribed two cases. treated with intravenous hepa and Hepatex P.A.F. respectively, which shown no improvement until given liver ract. Another case of relapsing sprue had proved slightly on exhepa and considerably on a simplex, but the mean diameter of the blood-cells had remained large and the con- ion had relapsed. A transfusion was given, lowed by Ventriculin. but the patient had con- ued to go downhill. Subsequently there was a rked improvement on hepatex and liver extract, t the patient had since relapsed again and it peared probable that the anæmia would become lastic and fail to respond to any form of liver atment. A fourth case was known to have had peracidity in 1925; when seen a few years later, ffering from sprue, he had achlorhydria. The stric juice, however, showed slight peptic activity, d the condition was not, therefore, achylia gastrica the full sense. At first there was no rise in acidity llowing the injection of histamine, but as treatment oceeded a response to histamine developed and ter the stomach began to secrete acid spontaneously d in increasing quantities, until a normal curve was tablished. Tropical sprue was a gastro-intestinal sease characterised by defective gastric secretion and alabsorption of fat, glucose, and calcium in the nall intestine. Dysfunction of the small intestine as the essential lesion, and in this sprue differed ndamentally from pernicious anæmia. An additional iagnostic point was that in sprue the rise of blood-ugar in the glucose-tolerance test was delayed, and he delay became less as treatment progressed. In ernicious anæmia the glucose-tolerance test gave a ormal curve.

Dr. G. W. **GOODHART** discussed a series of cases f megalocytic anæmia which could not be classed s pernicious anæmia. He classed them, however, n the group of anæmias due to defective blood formaion and not in the group due to excessive blood lestruction. They had in common megalocytosis, high colour-index and leucopenia; all had failed o respond to liver extract, and had appeared to show certain symmetry in the Price-Jones curve. The irst case was clinically a typical pernicious anæmia; here were less than 2 million red cells, the colour-index was high, van den Bergh's reaction positive. There was, however, little anisocytosis though some megalocytosis. The case did not respond to liver treatment but improved on blood transfusion. When seen later the anæmia was definitely megalocytic in type; the variability was increased. The Arneth count showed a shift to the left: not only was there an absence of the hyper-mature polymorphs typical of pernicious anæmia, but the opposite condition was present—an excess of young forms. At autopsy the bone-marrow was found to be aplastic; he would be interested to know whether pernicious anæmia ever terminated in aplasia. The second case occurred in a girl of 19, who had been complaining of pallor, breathlessness, and attacks of severe abdominal pain and vomiting for 14 months. The van den Bergh reaction was negative; there was no acid in the vomit. She had previously been given liver treatment in St. George's Hospital and while there had passed a melæna stool. The attacks of pain and vomiting persisted in spite of the renewal of liver treatment. The Price-Jones curve showed a shift to the right, variability was increased; there were leucopenia and a shift to the left of the Arneth index. Intestinal obstruction was suspected. but she was too ill for operation. At autopsy there was no bony evidence of pernicious anæmia. but severe ulceration and necrosis, with polypoid masses, were found in the jejunum. and melæna was present throughout the large intestine. Dr. Goodhart referred to seven other cases showing similar blood pictures, one associated with ascites and a contracted liver; another with Hodgkin's disease following prolonged treatment with deep X rays; another with rectal and vaginal hæmorrhages; another, possibly a true pernicious anæmia, associated with chronic intestinal obstruction from tubercular peritonitis; another with a tuberculous cavity in the lungs; another associated with lymphosarcoma; and another with sprue. All showed a megalocytic anæmia generally with a high colour-index and smaller or greater increase in variability: the Price-Jones curve showed a shift to the right in every case, and appeared to be symmetrical in all except the case with the tubercular cavity in the lungs. The Arneth curve showed either a shift to the left or no change. He had thought at one time that a symmetrical Price-Jones curve might serve to distinguish pernicious anæmia from sprue, but this had not been borne out by experience. He asked whether the curve had been symmetrical in Dr. Fairley's case of sprue which had failed to respond to treatment.

TROPICAL MACROCYTIC ANÆMIA.

Dr. **LUCY WILLS** said that tropical macrocytic anæmia was seen most commonly in pregnant women, though it also occurred in men and non-pregnant women. Her remarks referred to the disease as seen in India, where it occurred as a rule between October and April, and attacked all communities. Most patients reported for treatment during the second half of pregnancy and if they survived delivery there was generally a rapid improvement, but the death-rate was high. even in treated cases. A satisfactory history regarding fever was hard to obtain; diarrhœa and vomiting had been described as typical by Balfour. but varied with the incidence of diarrhœa in the population; sore tongue was usually present. The anæmia was very severe; in 54 consecutive cases 32 had counts below one million when first seen. The death-rate among her cases had not been much improved by liver extract at first, because the patients reported so late in the disease, but subsequently when the value of marmite was established and when patients began to appear at hospital earlier, the death-rate fell considerably. The blood picture was that of a megalocytic anæmia with a few megaloblasts and normoblasts. The Price-Jones curve showed a shift to the right and increased variability; there were few reticulocytes and the white cell count was variable. There was no hyperbilirubinæmia or other evidence of hæmolysis, and the test-meal showed normal acid secretion. Before the introduction of liver therapy all treatment was useless, but patients could now be treated successfully with liver extract or marmite, a yeast extract. The distribution of the disease, and dietetic surveys. suggested that it was a nutritional disorder. Dr. Wills had found diet grossly defective throughout the city in a survey she had made in Bombay. Marmite was inactive in Addison's anæmia so that the curative factor could which are still under my care have precipitated this communication because I dread to think what their suffering would have been if dilaudid had not providentially come to their aid.

A young man suffering from severe diabetes mellitus developed acute arthritis of his knee, so severe that for a time it was no easy matter to decide that it was not due to osteomyelitis. Excruciating pain persisted for several weeks in spite of the usual analgesics and complete fixation. Dilaudid 0·002 g., to begin with four-hourly and later every six hours, made *life bearable*. This patient developed distinct euphoria after the injection, but no untoward symptoms have developed on reducing the dose after four weeks' administration of the drug.

The other case is one of actinomycosis of the abdomen. If dilaudid were not available this patient would have had to receive very large doses of morphine which would have led not only to loss of appetite but also to stubborn constipation. The dose in this case had to be 0·004 g. which caused transient nausea and giddiness. The patient's appetite is indirectly stimulated by the drug because he is unable to eat when the pain is severe. Some time before a meal is due he receives a dose which allows him to eat in comfort. In this patient too euphoria follows the injection. The dose has not had to be increased although it has been given for a number of weeks.

In Germany the drug has been given as a rectal suppository with good effects, but of this I have not had experience. From my observations I conclude: (1) unlike morphine, it is *not necessary to increase* the dose of dilaudid; (2) nausea, giddiness, and confusion may develop for a minute or two, very rarely for longer; (3) the drug does not cause constipation; (4) the appetite is not marred by the drug; (5) in some cases euphoria is induced.

As already stated, I have not used the drug long enough to decide whether addiction develops.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF TROPICAL DISEASES AND OF MEDICINE.

AT a combined meeting of these sections on April 7th the chair was taken by Prof. J. GORDON THOMSON, President of the Section of Tropical Medicine, and a discussion on the

Megalocytic Anæmias of Tropical and Non-tropical Countries

was opened by Dr. L. J. WITTS. Thanks to the work of Dr. Price-Jones, he said, it was possible to construct curves to show whether the cells present in an anæmia were larger or smaller than the normal red blood-cell, or, in other words, to show whether a megalocytic or a microcytic anæmia was present. When megalocytes were present in the peripheral blood there was a proliferation of megaloblasts in the bone-marrow, and this proliferation might be the result of either a megaloblastic degeneration of the bone-marrow—such as that believed to take place in pernicious anæmia and the tropical anæmias—or a hyperplasia designed to repair blood destruction. The anhæmopoietic anæmias fell into three groups: nutritional anæmia, including tropical macrocytic anæmia of pregnancy; gastrogenous anæmia, including pernicious anæmia; and alimentary anæmia, including intestinal anæmia, fatty diarrhœa, and pellagra. Pernicious anæmia was now believed to be essentially due to achylia gastrica; a principle normally formed in the stomach was essential to the development of normal blood, and where this principle was absent it could be replaced by stomach and liver extracts. The intestinal anæmias were often associated with defective diet, achlorhydria, and diminished absorption, and might develop following intestinal resection, or stenosis of the intestine—for example, stenosis due to tuberculosis—infestation with intestinal parasites, and gastro-intestinal ulceration. Fatty diarrhœa was not uncommonly associated with a megalocytic anæmia and was seen in such conditions as cœliac disease, sprue, chylous diarrhœa, pancreatic diarrhœa, and gastro-colic fistula. The anæmia tended to pass through three stages: hypochromic anæmia with normoblastic marrow; megalocytic anæmia with megaloblastic marrow; aplastic anæmia. The first problem in cases of fatty diarrhœa was to decide how far the anæmia was the result of impaired gastric digestion and how far it was the result of diminished intestinal absorption. In a high proportion of cases there was achlorhydria, and in some it had been shown that the gastric intrinsic factor might be absent although hydrochloric acid was present. In some, gastric digestion was normal, and in these the anæmia must be taken as being due to diminished intestinal absorption. In the achylic group the problem was to decide to what extent the anæmia was due to the absence of the gastric intrinsic factor, and to what extent it was due to the absence of the vitamin B complex from the diet.

Megaloblastic proliferation due to an attempt to replace rapidly destroyed blood-cells was an uncommon and obscure condition. In one hæmolytic infection (bartonella) megalocytic anæmia occurred; with syphilis and blackwater fever the anæmia was of the secondary type. A hæmolytic anæmia of pregnancy occasionally occurred in temperate zones and differed from the tropical anæmia of pregnancy. A similar acute hæmolytic anæmia might occur spontaneously in men. Most anæmias of this type were microcytic, but a few megalocytic cases had been described in which there was an increase in the mean diameter of the red cells, but rarely much anisocytosis. A case of aleukæmic leukæmia had been described in which the van den Bergh reaction was positive and megalocytosis, polychromasia, and hæmosiderosis were present, and four cases had been reported by Prof. L. S. P. Davidson in which the red cells as well as the white cells in the blood picture had been affected in patients with Hodgkins disease. He would like to repeat that the two main divisions into which megalocytic anæmias could be grouped were: those due to a megaloblastic degeneration and those due to hæmolysis. Cases in the second group were rare and obscure.

SPRUE.

Dr. N. HAMILTON FAIRLEY said that Oroya fever was the only tropical megalocytic anæmia of hæmolytic origin. The blood destruction was very rapid in this disease and the red cell count might fall to below a million in a few hours. In other diseases, such as blackwater fever, where there was rapid hæmolysis the bone-marrow always showed an erythroblastic hyperplasia and never a megaloblastic degeneration. The anæmia developing in tropical sprue was megalocytic in a large proportion of cases. The colour-index was usually in the neighbourhood of one, and the red blood count had been between 2 and 3 million at the initial examination in a large series of cases. The patient generally complained of intestinal symptoms orthopædics, heart disease in children, even cancer. He looked upon this kind of thing with serious misgivings, for the State was providing a series of watertight compartments; if the right sort of patient with the right sort of disease fell into the right compartment, he was treated well, but there was little to guide him there. What was needed at the present time was increasing coördination of medical practice—especially at the periphery. It was a disaster to exclude the practitioner from many of the schemes in the profession; for the sake both of the profession and the public a complete State medical service should be developed. In the past, much research work had been done in the big voluntary hospitals; this was not because the staffs of these hospitals had a different type of mentality, but because the conditions of work there were favourable. The profession would produce better results in research if it were unified.

It was unfortunate that the doctor was financially dependent on the patient; if he went to see a patient too often (in the patient's opinion), he was adjudged to want money; if he did not go often enough he was charged with being neglectful. It would make for better work if the doctor could speak freely to the patient without fear that as a consequence he would go to another doctor.

Some form of State service Mr. Hastings regarded as inevitable. Two courses were open to the profession: it could wait and do nothing, and then the politicians would suddenly wake up and would inflict some incomplete and undigested scheme, like the panel or something worse; or it could see what was coming and try to mould public opinion, so that when the change did come a service would be formed which would be advantageous both to the science of medicine and to the public generally.

Sir **Ernest Graham-Little**, M.P., recalled a meeting of the society two years ago when he had been asked to open a discussion on the relative advantages of contract and private practice. At that date a scheme for the absorption of the community in contract practice had been put forward by the British Medical Association to forestall, if possible, another scheme which it was feared the Socialist Government intended to rush through. For himself he saw little difference between the two schemes. The B.M.A. scheme envisaged an extension of contract practice which was to include the whole community. Mr. Hastings had not made it clear what sort of general practitioner the socialist scheme had in mind. Did it contemplate a continuance of panel practice or something different? What made the scheme more actual two years ago was the fact that the Socialist Government was in power; that was now no longer the case, and he did not think the danger was likely to be revived in the present generation. The proposals as he saw them were twofold: the part to be played by the general practitioner, and by the hospitals as medical service. Both were to be carefully looked into. Numerically medical men and women were a small section of the community; they could not settle matters in the way they would like; they had to make them acceptable to their masters, the public. Under the proposal just outlined the choice of doctor and of where to go for his treatment were taken from the patient; but the British public could not be forced to go where they did not want to go. In the past the poor-law hospitals—much older as they were than the voluntary hospitals—had never been able to earn anything like their popularity.

But was the medical profession as a body, he asked, so keen upon being converted into a body which would closely approximate to the position of civil servants—i.e., with whole-time medical officers under complete departmental control. If not, he did not think a State medical service was inevitable. To the question, Would it be to the advantage and for the progress of medicine? he would answer emphatically No. Nothing would so conduce to standardisation, for a State possessed neither soul nor mind. In a recent letter addressed to him a young practitioner remarked that the ideal of the Ministry of Health was the practitioner who kept prescribing down and records up. Was such the final aim of the Hippocratic art? Loss of independence and of competition would be a serious drawback in State schemes. Anyhow the cost would be prohibitive; no Chancellor for a long time to come would ask for an additional eleven millions of money. What then was the great advantage of the voluntary hospital system? Mr. Hastings admitted that most of the research had been done there. What distinguished them from State-controlled institutions? First, individual management. In London there were over 100 hospitals belonging to the old poor-law service, now transferred to the London County Council, the affairs of which were managed by a central committee of the council, few of whom could know much about the matters they controlled. Compare therewith last year's work at Charing Cross Hospital, a splendid vindication in the face of great financial stress. How long would it take a municipal hospital to bring about such new additions? Economy would not be secured by handing over private concerns to Government management; a business which became too big for personal attention went to pieces.

DISCUSSION.

Dr. G. C. **Anderson** (deputy medical secretary, B.M.A.) said he did not agree with either opener, though he went further with Mr. Hastings than with his opponent, because now that the State had provided a medical service for the country he felt sure it would be extended. The B.M.A. did not sketch out its scheme because it thought the Labour Government would bring in a State-salaried service; what it was then afraid of, and was still fearing, was that the medical service in this country might develop on wrong lines—that there would be an extension of the clinic system rather than of the panel system. He agreed that at present the general practitioner was being frozen out. For £1,500,000, which might be contributed by the insured persons themselves, a specialist service could be provided from which insured persons were entitled to benefit. He wished the general practitioner to have further opportunities of extending his knowledge by being taken into close association with hospitals in his area. The B.M.A. had attempted to make insurance practice approximate as closely as possible to private practice; that was, he believed, in the interests of the profession and of the community. The present panel system was infinitely better than the service existing previously. He was anxious to prevent practitioners getting into watertight compartments—i.e., attending clinics for one particular disease only. The profession required a wider outlook.

Dr. A. **Welply** (secretary, Medical Practitioners' Union) said the State had stepped in and this movement was sure to progress, whatever doctors might do. He would not exclude people who could afford to pay for their medical attendance; he would not be Cohn's anti-anæmia factor but was possibly some part of the vitamin B complex, though the evidence was not conclusive that this was so. She had been able to produce a similar anæmia in monkeys by feeding them on diets based on the diet prevalent among the hospital class of patient, and deficient in vitamins, proteins, and salts. The condition ended fatally, but in a few cases which were preserved subsequent feeding with marmite proved to be curative. Marmite was a source of vitamins B1 and B2, but experimental work, and the freedom of beri-beri patients from this anæmia would seem to exclude B1 deficiency as the causative factor; more work was necessary to determine the exact nature of the active fraction. She asked whether Dr. Fairley had tried marmite in the treatment of sprue, as good results had been reported from its use in Madras.

Dr. C. PRICE-JONES said that the chief importance of his curves was to estimate anisocytosis. Their second advantage lay in the fact that from the distribution of cells the mean cell diameter could be calculated; this had no correlation with the degree of anisocytosis, but the variability had, and was therefore important. In the third place the curves showed the relation of distribution of cells and of their mean diameter to those of normal blood, as calculated from the examination of 50,000 normal cells. The appearance of symmetry in a curve could not be accepted as its face value; it was rash to call a curve symmetrical unless a mathematical calculation had been made to decide the degree of symmetry. The variability was much more important than the mean diameter; in cases other than pernicious anæmia the variability was low. In dysfunction of the bone-marrow there was megalocytosis and extreme variability, but where all the cells were affected, for example, by a toxin, the variability was not affected and might be low.

Prof. M. J. STEWART (Leeds) mentioned some cases of trinitrotoluene poisoning seen during the war. The blood changes in these had usually been aplastic, but in one or two cases they were megaloblastic. In one girl of 18 with atrophy of the liver there had been repeated showers of megaloblasts into the blood; she had made a good recovery. He wondered whether the case of megalocytic anæmia associated with contracted liver, mentioned by Dr. Goodhart, might possibly have been a case of necrosis of the liver.

Dr. R. C. LIGHTWOOD said that pernicious anæmia was almost unknown in children though recently a few cases had been reported. There might be three reasons for this; possibly the stomach might be more effective in producing the factor which stimulated the bone-marrow, but this was unlikely as hypochlorhydria was quite frequently found in children; secondly, pernicious anæmia might depend on faulty absorption of this factor, in which case cœliac disease might be expected to produce pernicious anæmia; thirdly, there might be some difference in the bone-marrow of children, and certainly the marrow was normally more active throughout childhood. Among 39 cases of cœliac disease, three had been quoted as showing the blood picture of pernicious anæmia. The usual blood changes in this condition included secondary anæmia with a low colour-index and a high proportion of lymphocytes. The lymphocytosis was rather characteristic of the disease and very persistent, sometimes being present years after the patient had recovered.

Dr. JANET VAUGHAN referred to 13 cases of cœliac disease treated with marmite. These are mentioned in an original article on p. 829.

In replying, Dr. FAIRLEY said that the curves in sprue had an appearance of symmetry more marked than that of pernicious anæmia curves, but that he would hesitate to regard them as more symmetrical without further calculations. He had not yet made use of marmite in sufficient doses in sprue to have formed any conclusions about its effects.

PADDINGTON MEDICAL SOCIETY.

A MEETING of this society held on April 12th, under the presidency of Dr. SWIETOCHOWSKI, was devoted to a discussion on

A State Medical Service.

Mr. SOMERVILLE HASTINGS said his wish was that everybody, without consideration of ability to pay, should receive in illness the best attention which medical science could give; he also wanted to see more prevention in medical arrangements. He was not advocating the scheme put forward two years ago by the British Medical Association, though it might constitute a useful step in the right direction His aim was a State service complete, unified, and free. He would have no compulsion for patient or doctor; he wanted a service so good that people would readily avail themselves of it. The doctor would be given freedom in medical matters; his routine clerical work would be done for him. Such a scheme should appeal to the most socialistic of all the professions, for, he said, doctors more than any others practised socialism. Their discoveries were, by tradition, broadcast to the world, and their charges were made according to the means of the patients. A desirable extension of the latter principle was that people should pay for medical services not in hard cash, but in rates and taxes, which were based upon individual means. During the last 50 years the general practitioner had been continuously robbed of clinical material and of interest in his work. Though he might diagnose infectious disease, the treatment was carried out at a fever hospital. Successive enactments had taken away from the general practitioner the diagnosis of one group of cases after another: tuberculosis he now saw less of than formerly, venereal diseases were treated largely in the clinics, and the treatment of school-children had been taken from him; there were also maternity and child welfare centres. In 1927 the *British Medical Journal* said: "There are no fewer than 17 departments, spheres, or directions of clinical activity for which provision is made in this sectional way under the auspices of local authorities; some of these cover an extensive field of medicine." Further, as soon as a patient got into a hospital the general practitioner lost all contact with him. Such were the complications of disease that many more cases were now going into hospitals than formerly, and many of the hospitals were now charging fees. Municipal hospitals were developing side by side with the voluntary hospitals; and because they had the financial backing of the State, and often controlled a bigger area, and so could arrange their clinical material in the way they desired, they were developing into formidable rivals to the voluntary hospitals. The process of providing medical needs by coöperative methods would go on and increase. A strong case could be made out for the treatment of the pre-school child, for the treatment of the adolescent before he came under National Health Insurance, and also for the treatment of all sorts of diseases in special clinics: rheumatism,

REVIEWS AND NOTICES OF BOOKS

What Life Should Mean To You.

By ALFRED ADLER. Edited by ALAN PORTER. London: George Allen and Unwin, Ltd. 1932. Pp. 300. 10*s.* 6*d.*

THE tale of literature devoted to Individual Psychology—the theory and practice of Dr. Adler and his friends—grows apace. Dr. Adler's own contributions, during the last few years, have been more than considerable, and may perhaps not unfairly be said to be, in form and quality, at once as baffling, as disarming, and as easily misjudged as is his personality.

Briefly put, Dr. Adler's published works fall into several groups which deserve to be distinguished, the one from the other. The first of these includes the "Organ-Inferiority," the "Neurotic Constitution," and the "Individual Psychology": books written in a not too easily understood German, and for the most part translated none too well, into an even less easily understood English (we had almost said, and perhaps with justice, American) between 1914 and 1924. The successive appearances of these books—some of them collections of essays—marked stages in the development of Individual Psychology, in the technical and scientific sense. In them the fundamental theses of organ-inferiority, the inferiority-sense, the prototype, the neurotic compensation, organ-jargon, and so on, were expounded in close technical terminology and were brought into relation with the classical psychological syndromes or reaction-types as illustrated by case-histories. These works remain indispensable for the professed adherent to Individual Psychology, and for the student of Comparative Psychology.

The books making up the second group (or, marking a second period) are perhaps rather hastily constructed volumes, of American provenance, easily read and pleasant, but discursive, and even formless, consisting in the main of the material from lectures and talks, taken down at the time, and revised for publication by friends and pupils. Among these must be reckoned the "Science of Living," "Understanding Human Nature," and the "Pattern of Life." They are frankly written in terms to be "understanded of the people," and are not necessarily the worse for that. Their engaging simplicity, their naïveté, and the apparent banality of some passages (in spite of the flashes of devastating epigram with which they are brightened) have led to their being under-rated in the mouths of many who confuse dullness with profundity, and simplicity with stupidity. And this, in its turn, has naturally led to a belittlement of Individual Psychology as a serious discipline. But the error of these fallible critics is that of those who have deemed "Alice in Wonderland" merely comic.

In a third and smaller group of volumes, Adler during the last few years has reinforced the links between Individual Psychology and the clinic. In "Problems of Neurosis," and again in the "Case of Miss R.," he has discussed the definite clinical problems of psychoneurosis, of obsession, and the like, in a truly Socratic fashion that is of the utmost help to practising psychologists as well as to many patients. In the present volume, however, a different note is struck. We may surmise that the substance was originally delivered in lecture form—perhaps in America where it was first published—but we are told that it has been edited by Alan Porter, and it is not difficult to recognise the skilled Oxonian hand of the poet, psychologist, and man of letters that we know him to be. The result is that, in despite of a title that is too journalistic, we have a really complete and almost systematic setting out, for the first time, and in agreeable literary form, of the general position taken up by Dr. Adler. The old doctrines that lie at the foundation of his recent constructive thought have been restated, and there is due insistence on recognition by the physician, the pedagogue, and the philanthropist alike, of the need for coöperation, in the social as well as in other fields. The orderly arrangement of the chapters, and the gently progressive method of exposition adopted, make this book an admirable one for perusal by the uninstructed practitioner, who will find benefit in a rapid conspectus before proceeding to closer study, and who wishes to recommend a book to his friends and patients. But, this being said, it still is true that, for those who desire really intimate acquaintance with the technique of Individual Psychological Practice, with the special attitude of Individual Psychology towards the sexual problem, and with the full metaphysical and philosophical implications of the whole theory, recourse must be had to the English versions of the three admirable treatises by Erwin Wexberg, of Vienna, and to the smaller books by Philippe Mairet and other English Individual Psychologists.

That Individual Psychology has "come to stay" will hardly, we think, now be disputed. Dr. Ernest Jones has recently admitted that it constitutes perhaps the best, if, indeed, not the only scheme of psychology available for the general practitioner. It is true that he added that this is perhaps less flattering to the medical profession than some might wish it to be. But the admission is important. It was recently said that Individual Psychology stands towards Freudian Psycho-Analysis much as does aseptic surgery towards the old Listerian system, with its paraphernalia of carbolic putty and steam sprays. The analogy may be pressed. Asepsis is now as integral a part of surgery as the disciples of Adler hope that Individual Psychology will come to be in medicine. Like asepsis, too, Individual Psychology is exposed to disparagement. The one was despised as "mere cleanliness"; the other is sometimes contemned as "mere common sense." But, if clean and common sense, why not? Cleanliness and common sense are each of the greatest pragmatic value and are justified alike by the deepest philosophy and the highest science! Again, asepsis and Individual Psychology are subject to like dangers. Insistence on ritual may crystallise into inelastic formalism; but neglect may slide into sloppiness or positive harm. So, at present, Individual Psychology is compelled to face, on the one hand the Scylla of academics, so dreaded by Nietzsche, and, on the other, that Charybdis of refusal to organise and to coöperate which drew Nietzsche to his solipsistic end. The essence of Individual Psychology lies in its freedom to adapt. As Einstein has said, it is the psychology of relativity. It has certainly brought relativity into the psychological field. Now, a psychology which can claim the author of the Special and General Theories of Relativity among its adherents can hardly be dismissed so lightly as may think some of those who chuckle over, without understanding, his own take in every person, irrespective of income. The scheme would naturally embrace 88 per cent. of patients, and legislation for the remaining 12 per cent. would cost a large amount of money, which would be saved by making the scheme all-inclusive. Even under a State service there would still be the private doctor, who would still be able to earn a living. Mention had been made of wastage in municipal hospitals, but he questioned whether there was more waste in them than in voluntary hospitals, which he had long thought employed the most wasteful machinery he had ever seen.

Dr. C. L. BATTESON (secretary, London Panel Committee) said he was opposed to a State medical service, for he thought it neither good for the community nor for the doctor. It was not necessary at the present time to provide full treatment for everybody. He did not think a State service was likely to come in the next 20 years. The only advantage to the public would be that of receiving treatment without making a direct payment. Moreover, under a State service the private practitioner would be gradually squeezed out. Dr. Batteson could not imagine a State service in which there would be any amount of free choice; and such a service would tend to stereotype the work of the profession and to stifle initiative. Also under a State service he did not think salaries would be princely. The price which would have to be paid for the loss of liberty and freedom of action would be too great.

Mr. W. MCADAM ECCLES agreed that service as good as that in the voluntary hospital should be at the disposal of everyone, but he did not agree it was necessary that this service should be under the State. It was difficult to define exactly what was meant by a voluntary hospital, because, so far as the staff was concerned, there was not now the voluntary service that there was 25 to 30 years ago; at St. Bartholomew's the staff had long ceased to be voluntary, for its members were salaried and dismissable at the end of any year. The most important feature of the voluntary hospital was its elastic administration. Moreover, the municipal hospital was only supposed to serve the people in the area of its own administration; and a further important point was the consultative nature of the voluntary hospitals. In this respect at present the municipal hospital was not as perfect as it might be.

Dr. A. BALDIE said that the matter was one of social tendencies—not of party politics or professional prejudice. The tendency to be always looking to the State for support was one fraught with danger to the State, the profession, and the public.

Dr. GERALD SLOT pointed out that in London there were 15,000 voluntary hospital beds, and 80,000 beds in municipal hospitals for the accommodation of the sick poor of London; hence it could be said that the municipal hospitals were doing the bulk of the treatment. People going to the voluntary hospital were seldom seen more than once by the same doctor or surgeon.

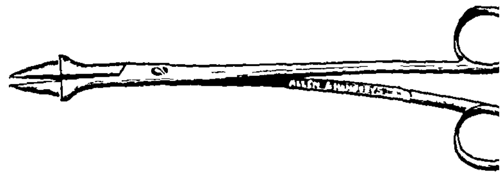
Dr. W. G. BENDLE laid stress on the need for giving the practitioner more clinical interest. Much of the treatment in voluntary hospitals was given by very junior men, though theoretically under supervision; the standard of qualification of the staffs of municipal hospitals was relatively higher because they were required to have filled a number of previous posts.

Other speakers were Drs. GIBSON, MELLOTT, STUNGO, FENTON, GRAY, and COHEN, and both openers briefly replied.

NEW INVENTIONS

A NEW TONSIL ABSCESS FORCEPS.

THE instrument here illustrated is designe
the opening of quinseys, and has the follo
advantages: (1) the point is sharp so that it
forates the overlying tissues easily and comparat
painlessly; (2) the edges passing down to the f
are sharp, though not razor sharp, thus cutting r



than tearing the tissues when the forceps is op
(3) there is a flange which takes the place o
old-fashioned strapping wrapped around a s
to prevent a too deep penetration; and (4) the
is slightly curved so that the hand does not int
in the line of vision.

The instrument, which has been made for n
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relatively painless in use.

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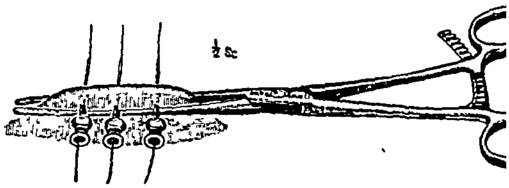
THE purpose of this instrument is to remove
skin strips for grafting chronic ulcers of th
or ulcers due to burns by burying seeds or
below the granulations. This small operati
generally done without assistance in the out-p
department, and is accomplished expeditiousl
bloodlessly with the help of these forceps.
area from which the skin is to be remov



first anæsthetised by infiltration, three hypod
needles (No. 16 or 23 s.w.g.) are then passed th
as shown in the illustration. The strip of s
now pinched up and steadied with the forceps
underneath the needles, and can be shaved of
scalpel or scissors, all oozing being controlled
pressure of the forceps. The wound is conven
closed by threading fine silkworm gut or hor
through the hypodermic needles before withd
them. The forceps resemble ordinary sinus f
except that a rather long ratchet is incorp
in the handle. In addition to the ordinary u
which sinus forceps are put, the instrument is
for holding the vein on the stretch in the ope
of ligation of a varicose vein through a small in
The removal of small skin tumours and of sa
of skin for biopsy is much facilitated by usin
instrument.

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ANTIPHLOGISTINE
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bon mot: that Adler is the Sancho Panza to Freud's Don Quixote.

We commend this book heartily, but as a beginning and not as an end of studies in Individual Psychology.

F. G. C.

Nutrition and Physical Fitness.

By L. JEAN BOGERT, Ph.D., Formerly Instructor in Medicine, University of Chicago. London: W. B. Saunders Co., Ltd. 1931. Pp. 554. 14*s*.

THE arrangement of material in this volume is unusual. The reader is first introduced to a study of the characteristics of the common foodstuffs and the food requirements of the human being; the physiological processes connected with the absorption and metabolism of foods and the disposal of waste material are then dealt with; and finally, the methods of dietary planning are explained as they affect human beings of all ages, including those in normal health and those suffering from various disturbances of nutrition. The author provides a great deal of useful information and displays a worthy restraint in the handling of his material. The language is not technical and suggests that the lay public is the target at which the book is aimed. The average Englishman might benefit considerably by putting into practice the principles of nutrition upon which emphasis is laid, although it is doubtful whether he could easily be persuaded to read the whole of this useful work.

The Search for Man's Ancestors.

By Prof. G. ELLIOT SMITH, M.A., M.D., D.Sc., Litt.D., F.R.S. No. 16, The Forum Series. London: Watts and Co. 1932. Pp. 56. 1s.

THIS little book, the latest of a series of monographs by various authorities, is, like the others, a wonderful shillingsworth. Prof. Elliot Smith's name on the title page makes the detailed facts stand beyond question, but the interest is carried further than the actual specimens concerned. These, it might almost be said, are incidental in the story, for he has never lost sight of the object of the book, which is to give the narrative of the how and why of the several findings. It seems incredible that one should sally forth on the face of the earth to some chosen spot, where one has assumed that somebody may have lived and died about half a million years ago, more or less, that one should then dig or delve there with the intention of finding his remains—and that one should find them. Yet something like this has taken place, and these old proto-human fossils have been brought to light. Those who wish to gain some idea of how this has been done cannot do better than buy this booklet; they will not regret the purchase.

Transactions of the American Association of Genito-Urinary Surgeons.

THIS volume (XXIV., 1931) opens with two accounts of Solitary Cysts of the Kidney, a condition that was previously regarded as rare but now seems to be commoner than has been suspected. The first description treats of cysts into which extensive hæmorrhages have taken place, the second of old cysts whose walls have become calcified. In most cases of this sort there is a clear history of previous injury, and Dr. J. A. C. Colston expresses the opinion that wherever there is reason to suspect trauma of the kidney it should be explored. Hæmatomata can then be dealt with, and the risk of transformation into a cyst with subsequent adhesions and calcification can be eliminated.—Drs. D. W. MacKenzie and Allan B. Hawthorne discuss the rare condition of Hæmangioma of the Kidney, and report two cases.—Dr. F. R. Hagner deals with Angioneurotic Hæmaturia. He believes that if these cases are followed to their end many of the patients will be found to die of cardiovascular lesions associated with nephritis.—Drs. H. Cabot and W. W. Holland enter a plea for the more frequent use of nephrostomy, either as a temporary measure to tide over a crisis, or as a permanent remedy for an incurable condition. They describe the technique which they have employed, which is a modification of that advocated by Marion.—Dr. J. I. Farrell has studied the secretion of the prostatic gland in dogs by making a prostatic fistula.—The volume also contains many other interesting papers.

British Journal of Children's Diseases.

To the January–March number Dr. George W. Bray contributes a paper on the Allergic Child, in which he first discusses hereditary disposition which can be demonstrated in from half to two-thirds of all cases, and then the acquisition of sensitisation in those cases in which no definite hereditary influence can be detected. The common characteristics of allergic conditions are described, as well as the common individual manifestations of allergy in childhood, of which the most frequent are cutaneous eruptions such as eczema, flexural pruritus, urticaria and purpura, abdominal conditions, such as food upsets, colic, and recurrent vomiting, hay-fever, migraine, enuresis, and reactions to therapeutic sera and physical agents.—In their paper on Examples of Anæmia of Various Kinds in Children, Dr. F Parkes Weber and Dr. E. Schwarz describe examples of the following different types of anæmia: (1) severe anæmia cases of agranulocytic or aplastic type which turn out to be really of the nature of lymphatic leukæmia; (2) recurrent epistaxis with anæmia and temporary slight splenomegaly; (3) temporary anæmia probably due to lead; (4) anæmia associated with signs of colitis and enlargement of the liver (5) severe secondary or chlorotic type of anæmia probably of nutritional or dietetic origin; and (6 Lederer's acute hæmolytic anæmia.—In a paper on Chronic Streptococcal Toxæmia, Dr. J. D. Hindley Smith, who reports six illustrative cases, states tha this condition is far more widespread than is a present recognised, and appears to be on the increase especially in large centres of civilisation, so as to b almost as great a menace to national health and economics as tuberculosis. Three distinct stage may be described—viz., a primary in which ther is an infected local lesion; a secondary, characterise by general disturbance of the organism; and tertiary, in which localised damage takes place owin to the defensive reactions of the tissues.—In a pape on the Treatment of Early Cases of Knock-knee an Bow-leg in Children, Dr. Edgar Cyriax shows tha some of these deformities are primarily due to los of equilibrium between certain groups of muscle in the thighs, which cause faulty attitudes of th legs, and that early cases can be cured by mechan therapeutics to restore the loss of balance. In earl knock-knee treatment should consist in re-education Recourse is to be had to the so-called resisted exercise applied according to the Swedish system of Ling followed by stimulatory *pétrissage* to the weakene muscles, the others being left alone. In bow-le the weakened adductors of the thigh should b similarly re-educated by means of resisted exercise and subjected to stimulatory *pétrissage*.—Dr. W. F Bett reports an unusual case of multiple lipomat in a boy aged 2 years, which was successfull treated by operation.—The abstracts from curren literature are devoted to diseases of the blood an spleen.

THE LANCET.

LONDON: SATURDAY, APRIL 16, 1932.

ISIBLE "ULTRAMICROSCOPIC" VIRUSES.

THE conception of a visible filtrable virus is new one. Twenty-eight years ago Borrel scribed minute bodies in the virus inclusions fowl-pox which he considered to be the virus. the following year von Prowazek demonstrated nilar structures—termed by him "elementary dies"—occurring within and without the cells vaccinial lesions, and in 1906 E. Paschen ew attention to the minute granules in variolous mph and vaccinial material, commonly referred now as "Paschen bodies." He found somewhat milar granules in varicella, and from a detailed udy of these bodies, more particularly those esent in the variolo-vaccine lesion, concluded at they were specific. Since that time many vestigators have followed these pioneers in this eld. The original observations of Borrel and 'aschen have been confirmed and extended o other members of the group of filtrable viruses; ut, despite this, the view that some, at any rate, f the filtrable viruses are minute coccus-like nicro-organisms has not received general acceptnce. There have been several reasons for this ttitude. The technique required for the staining f elementary bodies is, relatively speaking, aborious and one which does not always furnish uccessful preparations even when carried out with great care. Added to this, artefacts, closely simulating elementary bodies, appear from time to time in such preparations to confuse the issue. But although these technical difficulties have probably delayed the recognition of the true nature of these elementary bodies, a much more effective brake on progress have been pronouncements by those speaking with authority. Evidence obtained from ultrafiltration experiments, which would not have been considered seriously were it not for the reputation of their authors, suggested that the disparity in size between virus and elementary body precluded any relationship. Expert microscopists have looked askance at these elementary bodies; in fact, at the discussion on filtrable viruses held by the Royal Society three years ago, Prof. J. G. G. Ledingham alone upheld the possible ætiological significance of the Paschen body in vaccinia.

During the last two years, however, events have moved rapidly and the specific nature of some of these elementary bodies has been placed beyond all reasonable doubt. C. E. Woodruff and E. W. Goodpasture[1] have shown that a single Bollinger body—the inclusion body of fowl-pox—when isolated and washed free from any adhering virus is still capable of infecting, and that the contents of the Bollinger body consists of numerous elementary bodies (the Borrel bodies) embedded in a gelatinous matrix. And the ætiological significance of the Borrel bodies has been further advanced by Ledingham who recorded in our columns last September that by fractional centrifugation he had succeeded in obtaining these bodies in relative purity and in demonstrating their specific agglutination with an anti-fowl-pox serum. Elementary bodies are present in psittacosis material, an observation first made independently in 1930 by W. Levinthal, R. D. Lillie, and A. C. Coles. These bodies stain easily and look like micro-organisms and on the strength of this and their more or less constant presence in virulent material Levinthal[2] concluded that they were the causal organism and proposed the name *Microbacterium multiforme psittacosis*. His conclusion was not justified, but the additional evidence required to prove his thesis has now been supplied by S. P. Bedson.[3] The latter has shown that the elementary bodies present in a suspension of virulent mouse-spleen can be freed from adventitious material by fractional certrifugation and washing and that the purified bodies which are capable of transmitting the disease are agglutinated specifically by an anti-psittacosis serum. In a like manner the original claim of Paschen, that the minute bodies described by him in vaccinia are the virus, has found confirmation. Applying similar methods to those employed by him in the case of fowl-pox virus, Ledingham (loc. cit.) has shown that the Paschen bodies are specifically agglutinated by an antivaccinial serum. E. G. Nauck and Paschen[4] have found that increase of virus in tissue culture is accompanied by a corresponding increase in elementary bodies, and finally, as they report on p. 823, Dr. G. H. Eagles and Prof. Ledingham succeeded in obtaining the Paschen bodies in a pure state by high-speed centrifugation and repeated washing and have shown that virulence resides entirely in the Paschen body.

Quite apart from the stride forward which these investigations mark in the study of filtrable viruses there is a point which calls for special comment, and that is that this progress has been achieved by the use of conventional methods alone. No sensible person would dream of decrying technical improvements and innovations. Refinements in dark-ground microscopy and the use of short wave-length light should prove of inestimable value in this field, especially in the case of viruses—and we know of several already—which are beyond the limits of microscopic visibility. But among the less-studied filtrable virus there must be some capable of investigation by the methods which have proved fruitful in the case of vaccinia and psittacosis, and the encouragement given by these successes should be of material help in the work lying ahead.

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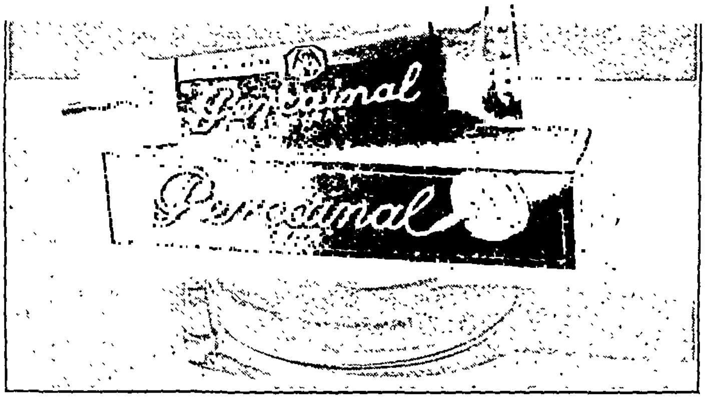
[1] Amer. Jour. Path., 1929, v., 1; 1930, vi., 713.

[2] Congr. Internat. Microbiol., Paris, 1930.

[3] Brit. Jour. Exp. Path., 1932, xiii., 65.

[4] Zeit. f. Bakt., 1932, cxxiv., 91.



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assical operations with a maternal death-rate 1·9 per cent.—a result to be regarded as extremely ood when it is borne in mind that the series ncluded all comers. In 24 cases premature labour ad been induced instrumentally before operation no mortality); in eight, forceps had been attempted 1 death); 14 were cases of eclampsia or other oxæmia (1 death); five were cases of accidental æmorrhage (1 death); and there were 25 cases of lacenta prævia (no death). H. R. SPENCER has eported [6] 120 cases, many of which were infected efore operation, with four deaths. This should e compared with the 1·23 per cent. mortality at he Chicago Lying-in Hospital in 895 cases of the ow-segment operation.

To sum up. While it may be granted that in nfected cases the newer operation is attended vith certain advantages that more than compensate for its greater difficulty, it is certain hat if the patient is not in labour the difficulties are much increased. No doubt a true ow-segment operation can be carried out at that period; only in 57 per cent. of GREENHILL's series was the patient in labour before the operation was started. But the lower segment is then imperfectly formed; it is not thinned out as it is after labour has been in progress for some time, and it is in consequence more vascular. Further experience of the operation at this stage is necessary before its value can be finally assessed.

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THE CINEMATOGRAPH IN MEDICINE.

THE cinematograph is as much a feature of modern civilisation as the motor-car and the aeroplane. For many years it has held a recognised place in general education, and instructional films of a high degree of excellence, portraying primitive peoples, features of animal and plant life, and the natural and architectural beauties of foreign countries appear to be an acceptable part of the programme in the usual places of entertainment. Films have proved valuable in disseminating information about modern agricultural methods, and the means of combating the various pests that attack crops and cattle. But the application of similar methods to medicine has been somewhat slow, and it is only within the last three years that the cinematograph has become a regular feature in scientific discussion and in the lecture theatres of medical schools. The reason is partly because medical education demands, perhaps more than any other, direct demonstration and personal guidance, partly because medical cinematography has not yet found its best methods.

The cinematograph has potentialities lacking in any other method of representation. It not only portrays form and motion, but through motion registers the dimensions and texture of the objects it records. It embalms the rarity; instances of rare diseases, or exceptional examples of more common ones, can be preserved for the study of successive classes. It bridges spaces of time, so that succeeding phases of some condition that may take months or years to develop may be shown in rapid sequence on the screen, allowing those who have only seen parts to visualise the whole, and all to form a coherent picture of what have been scattered glimpses. It provides an analysis of movements either too rapid or too slow to be appreciated by the eye. Accelerated photography, which shown at normal speed gives the slow motion film, permits the study of such subjects as normal and abnormal gaits, and the demonstration to students of the correct methods of tying ligatures and handling instruments. The division and growth of cells in tissue cultures, and the stimulating or retarding effect of drugs or radiation on this growth, may be recorded by retarded cinematography and projected at a speed that makes the process simple for the beginner, throws new light upon its phases for the expert, and, by its merely dramatic effect, emphasises the lesson for all. Again, outside considerations need not affect the sequence of a film, whose length and manner is chosen purely for its value as a teaching agent. Redundant parts can be cut out, and diagrams, explanations, or " close-ups " of essential apparatus, or part of the field of operation, may be inserted wherever further clarity is required, without the drawbacks that such acceleration or delay would involve in clinical work.

The whole question of the place of the cinematograph in medical education was reviewed by Prof. R. E. KELLY, of Liverpool, before the Surgical Section of the Royal Society of Medicine on April 6th. His lecture was illustrated by a series of films, which were all the more valuable in that they were taken by amateurs with a Cinekodak, and therefore showed what uses the teacher might make of the machine in his own work. The ground covered included operations upon the brain and spinal cord, upon an aneurysm of the carotid artery, and upon the breast with the diathermic cutting current, as well as records of the clinical features of the aneurysm before operation and the gait and facial movements of the cerebral tumour cases afterwards, and a demonstration of surgical emphysema involving the whole trunk. As Prof. KELLY explained, a film of an operation is not so much a record as an epitome, a series of excerpts showing the essential steps; but the skill with which his condensations had been made, and the high quality of his photography, should stimulate those of his hearers, whose efforts in the same field had proved disappointing, to try again. The majority of amateur surgical films are spoiled by poor focus. The method employed in Liverpool to obviate this fault—a measured piece of sterile silk fastened at one end to the wound and the other to the camera, which could then be moved to any angle at a fixed focus—is worthy of wider publicity.

The discussion which followed Prof. KELLY's paper was concerned almost entirely with the use of the cinematograph in recording surgical operations, and speakers foreshadowed the employment of colour photography and sound recording for this purpose. Indeed it is in the field of operative surgery that motion photography has so far been

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[6] Cæsarean Section, London, 1925.

LOW-SEGMENT CÆSAREAN SECTION.

SINCE WILLIAM SMELLIE, two centuries ago, wrote of the Cæsarean operation it "hath been performed both in this and the last century, and sometimes with such success that the mother has recovered and the child survives," we have advanced a long way. And yet a maternal mortality of almost 2 per cent. in so-called clean cases, which is the present experience of the country as a whole, can be viewed with little satisfaction. Its meaning will be better realised when we call to mind that the general maternal mortality-rate in England and Wales is about 4 per 1000. If every woman were delivered by classical Cæsarean section before the onset of labour or early in labour the death-rate would be 20 per 1000; Cæsarean section is, in fact, five times as dangerous for the mother as delivery by the natural passages. After labour has been in progress for a considerable time and sepsis has been introduced by internal examinations and repeated attempts at delivery the results of classical Cæsarean section are of course much more serious, and may in some cases be disastrous—a mortality of 25 per cent. or more being not infrequent. It was in the hope of remedying this state of matters that in 1907 the low-segment operation was introduced, in which the child is extracted through an incision in the cervix and lower segment of the uterus. The advantages claimed are briefly these. The spill of liquor amnii is limited to the pelvis so that there is less danger of general peritonitis if the fluid is infected; healing of the wound in the uterus is better, as the lower segment is at rest in the puerperium; he uterine wound is covered by the flap of peritoneum and seepage of lochia through the wound is thus prevented. For the same reasons the operation is held to be safer in infected cases. There is said to be less liability to post-operative adhesions as the uterine scar is situated low down in the utero-vesical pouch; shock is less and the convalescence is less disturbed as the intestines and omentum do not come into view during the operation. Finally, it is stated that rupture of the scar is less common in subsequent pregnancies and labours. On the other hand there can be no doubt that the operation is more difficult and may, unlike the classical, call for a considerable experience of abdominal surgery, while a longer time is required for extraction of the child. This increased difficulty is itself regarded by some as an advantage. There is probably no abdominal operation that is more frequently tackled by amateur surgeons than the classical Cæsarean, and there is reason to believe that this largely accounts for the high mortality.

The low-segment operation, with its various modifications, has gained steadily if slowly in favour, and sufficiently large series of cases have now been reported to justify an attempt to compare its results with those of the older operation. J. P. GREENHILL (Chicago) recently reported[1] 140 consecutive cases in which the low-segment operation was employed, with no maternal deaths an a fœtal mortality of 5 (3·6 per cent.). In thre of these cases, the fœtus was dead before th operation was begun. The series included tw eclamptics, seven cases of placenta prævia, and five of abruptio placentæ, while in 14 per cent the membranes had been ruptured for 24 hours or more. He has also compiled statistics of 895 low-segment operations done by all operators including himself at the Chicago Lying-in Hospital, with a maternal mortality of 1·23 per cent. J. ST. G WILSON (Liverpool) has related[2] a series of 50 cases with no maternal death and one stillbirth V. COCQ compares[3] his results in 300 classical Cæsarean sections with those obtained in 50 low-segment operations. Of the former all but one were carried out on clean cases (dans les cas purs, he writes), the maternal death-rate being 2·3 per cent. Amongst the 50 low-segment operations there were 2 deaths (4 per cent.), but some of the patients had been in labour a long time, in some the membranes had been ruptured more than 24 hours, some had had several vaginal examinations before admission to hospital, and some had high temperatures before operation. Of the two fatal cases, one was exsanguine from unavoidable hæmorrhage before operation was begun; the other had acute pulmonary complications before operation and died of these some time afterwards. COCQ considers the low operation a much more formidable proceeding, and he deals in some detail with the difficulties encountered. In one case he found it necessary to do hysterectomy on account of downward tearing of the uterine incision. He concludes that the low operation is good in certain dystocias, but he adds a warning against undue enthusiasm. He would not, for example, substitute section for podalic version in every case of dystocia from contracted pelvis; it is, he thinks, still necessary to teach students, who may have to practise in the country, how to deliver by version in such cases. In clean cases he regards the classical as the better operation; it is simpler, and accidents in the course of the operation are rare. While after the low operation there may be less general infection there is more local sepsis in the pelvis and abdominal wall. When, however, infection is present he thinks the low operation is safer; its introduction has extended the indications for Cæsarean section. V. B. GREEN-ARMYTAGE speaks well[4] of the low-segment operation, which he has performed in 75 cases with 11 deaths (14·6 per cent.) and a fœtal mortality of 13·3 per cent.; 48 of his cases were "essentially septic" at the time of operation. "Before the war," he writes, "50 per cent. of the mothers who suffered the operation (classical Cæsarean with eventration of the uterus) after they had been hours in labour and were septic due to multiple examinations or trauma died of general peritonitis." Mrs. F. IVENS-KNOWLES has reported[5] 352 consecutive ven slowly, after the bowel has been emptied, to event the initiation of defæcation reflexes, the id-level of the reservoir from which the irrigation given being not more than two feet above the ctum. While the giving of an irrigation which iall "consume from 6 to 10 gallons and take early an hour" may seem to some a counsel of erfection for routine procedure in the hustle of odern hospital life, there will be little doubt hat a more satisfactory lavage of bowel and emoval of tenacious mucus will be obtained by his method than by the more hurried injection nder greater pressure so frequently employed.

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[1] Surg., Gyn., Obst., October, 1931, p. 547.

[2] See THE LANCET, 1931, i., 977.

[3] Brux. Méd., March 20th, p. 579; March 27th, p. 595.

[4] Ind. Med. Gaz., 1931, lxvi, 184.

[5] Cæsarean Section, London, 1925.

BASTEDO has a word of warning with regard to the over-zealous self-irrigator found so frequently among patients suffering from mucous colitis, and deprecates the exploitation of the procedure by nurses and others. Amongst the commoner mishaps he mentions bleeding from the rectum, the tearing of a rectal valve, and the injury or severance of a polypus. Properly employed, however, he considers that irrigation tends to improve rather than lessen the tone of the bowel wall and serves as a valuable therapeutic measure in washing out putrefactive material and loosening mucus above the defæcation area.

ANNOTATIONS

ATEBRIN IN MALARIA.

OF late years a new interest in malariotherapy has centred round the synthetic compounds produced by the I.G. Farbenindustrie in Elberfeld; for, as was predicted, plasmoquine has proved to be the prototype of other synthetic remedies. The latest of these, Atebrin, was first mentioned in THE LANCET by our Calcutta correspondent last week, and is the subject of a paper by Dr. Richard Green in our present issue. In the *Deutsche medizinische Wochenschrift* of April 1st, which contains a whole series of reports on this drug, Prof. Walter Kikuth gives the first account of its chemotherapeutic action. Formerly called erion, it is a yellow powder which melts at 245–255° C., and is soluble to the extent of 7 per cent. at 40° C. in neutral solution. From the chemical standpoint an alkylamino-acridin derivative, it was first synthesised by Mietsch and Mauss, and when tried in avian malaria (*Plasmodium præcox*), on the lines formerly employed by Roehl in his plasmoquine experiments, it was found to be less poisonous, but also less efficient in absolute figures. Atebrin showed itself 15 times weaker in the therapeutic sense than plasmoquine, and four times more powerful than quinine. In avian malaria it did not bring about any rapid sterilisation of the blood, as does plasmoquine, but behaved in this respect more like quinine; nor were more favourable results obtainable with such other strains of avian plasmodium as *P. elongatum* and *P. circumflexum*, forms which more closely resemble the subtertian parasite in man. By ingenious experiment on the hæmoproteus infection (*Hæmoproteus orizivoræ*) of the Java sparrow, Kikuth conclusively proved that the gametocytes which appear in the peripheral blood of this bird are eradicated by plasmoquine, whilst the schizont stages which develop in the endothelial cells of the lungs are attacked by atebrin, so that in individuals treated by this combined method relapses of hæmoproteus infection can no longer take place.

Prof. Franz Sioli writes upon atebrin in therapeutic malaria in general paralysis. His results are apparently very favourable, and entirely substantiate what has been learned from experimental avian infections. Atebrin can safely be given by oral administration in daily doses of 0·3 g. (3×0·1 g.) for a period of three days (total dosage 0·9 g.). Given in this manner it appears to cause the safe and permanent cure of experimental therapeutic malaria, being at least four times more reliable than plasmoquine. Apparently after three daily doses the patient remains parasite-free for at least 34 days. Under systematic and careful observation the intracorpuscular parasites begin to show marked morphological changes after 0·3 g., and after 0·6 g. they disappear entirely. Certain toxic effects are on record; thus 0·3 g. sometimes provokes intestinal pains, and in the great majority of cases the skin assumes a yellow tint. At first this was attributed to icterus, but the coloration has now been proved to be due to the natural pigmentation of the drug. Daily analysis of the urine showed no marked excretion of urobilin or bilirubin as the result of absorption of atebrin, and this suggests that it has no toxic effect on the liver. F. M. Peter, who has used the drug in Gurbanesti (Rumania) in cases of natural infection by malaria, is able to show that in this compound we have a schizont-destroying agent of the first order. The material consisted of three cases of benign tertian malaria, the total dose of atebrin being 1·0 g. The effect on the temperature curve, as well as upon the parasites, was striking. The smaller ring forms (or schizonts) were first attacked, and the gametocytes later, while the shrinkage of the spleen was rapid and complete. In two cases of natural subtertian infection somewhat similar results were obtained; the schizonts disappeared after 24 hours, but no effect upon the gametocytes (crescents) was ascertainable. P. Mühlens has had the advantage of much more clinical material in the Hospital for Tropical Diseases in Hamburg. From his report[1] it appears that from Nov. 24th, 1930, to the end of February, 1932, 122 cases (17 tertian, 8 quartan, 85 subtertian, 2 cases of quinine idiosyncrasy, and 10 of malarial complications) have been treated alone with atebrin, or with atebrin combined with plasmoquine. The results were similar to those already related. In subtertian infections the effects upon the schizonts were far more remarkable than those of quinine or plasmoquine. Using a combination of atebrin (0·3 g. daily) with plasmoquine (0·03 g.) the gametocytes disappeared in three to six days. Mühlens further satisfied himself that the action upon quartan malaria was equally satisfactory. He has been able to employ a total dosage of 4·8 g. without producing any toxic symptoms, and considers the yellow colour of the skin to be due to acridin-staining which sometimes persists for two to three weeks. In his opinion, atebrin is equally satisfactory in all three forms of malaria, but in combination with plasmoquine it attains its maximum efficiency in subtertian infections. However, in heavy ring infections he thinks that for the first two days intramuscular quinine should always be exhibited, to be reinforced later by atebrin and plasmoquine. It is good to chiefly exploited. For the expert and advanced student such films serve a definite purpose, for they allow the demonstration to a large audience of steps that can only be seen at operation by the surgeon and his assistants, and enable a lecturer to explain the details of a new operation and the use of some special instrument in the precincts of a medical society. But it is open to question whether a film of an actual operation, even when it is carried out by a leading exponent, is of any real value in the teaching of students. The absence of colour and contrast, the high lights that are reflected from moist tissues, the ooze of blood and movements of swabbing, and the multitude of unessential instruments that crowd the field on the screen, all lead to a confusion that can only be sorted out by the practised observer. A film of an operation is essentially an adjunct to a lecture by the operator himself, and the circulation of library films is very prone to degenerate from teaching to propaganda. The purely teaching film, designed and photographed for the instruction of beginners in the elements of operative surgery, is yet to be made, but a pointer of the way in which such a film should be arranged to be of the greatest value is provided by that dealing with infections of the hand, which is included in the Kodak library. Such a film might commence with a short history of the operation, and an account of the indications for its performance with diagrams of the main steps in the technique. The actual operation should be carried out on the cadaver, where the distance of the camera is dictated only by the size of the field to be shown and not by the needs of asepsis, for thus attention is not distracted and vision hampered by retractors, hæmostats, and the hands of assistants, while the tissues are not stained by blood, each step can be carried out deliberately, and the anatomical landmarks of the region can be pointed out as they are exposed. Each step should be explained by captions, and the special instruments that are required should be shown in "close-ups" before they are brought into use.

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[1] Münch. med. Woch., April 1st, p. 537.

The cinematograph will surely find its place in all branches of the curriculum, and in the earlier years should fill an even more useful part than that which it has till now occupied in the later stages. It is hardly necessary to point out that the difficulty, insuperable in this country, of repeating before students more than a small number of the animal experiments upon which physiological knowledge is based, could thus be overcome; and that in anatomy films could be used to demonstrate, as no other method can, those structures which can only be shown in specially prepared subjects under exceptional circumstances. But the use of a cinematograph is not limited to photography. The animated cartoon, immortalised by "Felix" and "Micky Mouse," would delineate, with a lucidity that could not fail to carry conviction, the processes of intestinal rotation and all those intricate facts of embryology which even the pen of a Keith has not been able to describe in words that the beginner can master without intent and repeated application.

THE USES AND ABUSES OF THE COLON.

For many years the colon has been a centre of interest to laymen and the medical profession alike. It has been douched, bathed, stimulated, soothed, anæsthetised, fed, and more recently psychoanalysed with an enthusiasm which, perhaps, no other single organ of the body can lay claim to have aroused. But in many quarters a note of warning and a plea for a more rational approach is now being sounded. Not only is the more elaborate nutrient enema now a thing of the past, but doubt has even been cast on the efficacy of the glucose enema as a means of administering carbohydrate. We have little positive evidence as to the actual amount of glucose which can be absorbed by this route, since neither the blood-sugar curves, nor changes in the respiratory quotient, nor even analyses of the subsequent fæcal return provide at all an accurate means of quantitative estimation. A recent study by Dr. F. L. Scott and Dr. J. F. B. Zweighaft,[1] carried out on medical students, showed a slight fall in the blood-sugar during the three hours succeeding the administration of 200 c.cm. of 10 per cent. dextrose solution per rectum, and this they suggest may possibly have been due to stimulation of pancreatic activity by the absorption of a small amount of dextrose, or more probably to chance variation; they also found that a variable and frequently considerable proportion of the dextrose administered may be recovered from the stools after two and one and a half hours.

Attention has also been drawn to the dangers both of unskilful administration and indiscriminate use of enemata and colonic lavage. Dr. H. H. Rayner [2] has lately described the severe trauma and extensive sloughing that may result from the use of an unguarded bone or glass nozzle of an enema syringe—penetration of the anal mucosa being followed by fluid forced under pressure into the submucosa, while reference has been made in our columns (The Lancet, 1931, i., 600) to the warning of J. Friedenwald and M. Feldman[3] as to the inflammatory changes which may follow the repeated use of irritating chemicals, including sodium carbonate and even soap-sud enemata. A detailed summary of the technique, therapeutic applications, and dangers of colonic irrigations, written by Dr. W. H. Bastedo for the American Council of Physical Therapy, appears, therefore, at an opportune moment.[4] While he distinguishes irrigations from enemata as having primarily the function of lavage whereas the latter are intended to produce defæcation, many of his observations are equally applicable to both. He considers the insertion of stiff tubing for more than 5 or 6 inches into the rectum not only useless, owing to the fact that greater lengths tend to curl up in the rectal ampulla, but dangerous. In colonic irrigation he recommends the use of an inlet and an outlet tube, and plain water at or just above body temperature; the irrigation should be nd a flow of secretion containing hydrochloric acid nd pepsin, changes which could be prevented by previous section of the vagi. When the vagus was divided and its central end anastomosed with the peripheral end of the cut phrenic (a sufficient interval being allowed for regeneration), hypothalamic stimulaion caused contraction of the diaphragm. Another significant observation was that prolonged stimulation ed to the appearance of small areas of hyperæmic mucosa near the lesser curvature of the stomach. Beattie's preliminary results therefore not only afford evidence of the situation of the parasympathetic centre, but also promise to throw some light on the ætiology of gastric ulceration.

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[1] Arch. Int. Med., February, 1932, p. 221.

[2] Brit. Med. Jour., March 5th, 1932, p. 419.

[3] Amer. Jour. Surg., 1931, xi., 23.

Jour. Amer. Med. Assoc., Feb. 27th, 1932, p. 734.

THE MEGALOCYTIC ANÆMIAS.

THE old classification of anæmias as primary or secondary has rapidly given way in the last few years to one dependent upon the size of the red cells. C. Price-Jones has recently elaborated his earlier work on red cell size and has determined by refined statistical methods both the smallest and largest possible normal red cell distribution curves. A condition, therefore, in which the red cells show on measurement a curve falling to the right of the largest possible normal can be described as a megalocytic anæmia and one where the curve falls to the left of the smallest calculated normal, as a microcytic anæmia. Certain cases within normal limits have been described by M. M. Wintrobe as normocytic. This variation in size of the red cells appears to have a direct relationship to the ætiology of the anæmia. Thus the microcytic anæmias respond to massive iron dosage, while the majority of the megalocytic anæmias can be relieved by adequate administration of liver extract or its substitutes. The problem of the megalocytic anæmias is becoming increasingly complex however, as was shown in the discussion at the Royal Society of Medicine reported on p. 836. Castle's fundamental observations on the ætiological significance of a failure of gastric secretion in Addisonian anæmia forms the basis for his hypothesis that a similar failure is the cause of all megalocytic anæmias, associated in some instances with faulty absorption. This is supported by the finding that the majority of such anæmias are associated with a demonstrable gastric lesion: sprue, idiopathic steatorrhœa (which probably includes the majority of conditions described as fatty diarrhœa, cœliac disease, chylous diarrhœa and pancreatogenous diarrhœa), gastro-colic fistula, intestinal anastomoses and resection, gastrectomy, carcinoma of the stomach, and bothriocephalus anæmia. The group are all relieved by the suitable administration of the effective principle in liver. It is possible that the tropical anæmia described by Dr. Lucy Wills in which there is no demonstrable gastric deficiency is dependent upon lack, not as in the others of Castle's intrinsic factor, secreted in the gastric juice, but of his extrinsic factor supplied in the food, since all Indian diets are notably deficient. Such a case of typical Addisonian pernicious anæmia occurring in a strict vegetarian with apparently normal gastric secretion and relieved by diet alone has been described.[1] Dr. Goodhart discussed, however, an extremely interesting group of cases associated with a variety of conditions as pulmonary tuberculosis and Hodgkin's disease which failed to react to liver or liver extract given by mouth and which in some cases showed no obvious intestinal lesion. They had certain features in common which distinguished them from Addisonian pernicious anæmia. The Price-Jones curve appeared on inspection to be relatively symmetrical and though, as Dr. Price-Jones remarked, this does not mean that it was so mathematically, it was an appearance common to the group and therefore perhaps significant. Many of them, in spite of a leucopenia, showed a shift of the Arneth count to the left which is never seen in the idiopathic form and in none were the characteristic multilobed polymorphs found. Dr. Vaughan and Dr. Hunter also point out in their observations on idiopathic steatorrhœa published in our present issue that Addisonian pernicious anæmia can be clearly differentiated from a further large group of megalocytic anæmias possessing certain features in common. Sprue, tropical anæmia, megalocytic anæmia associated with gastro-colic fistula, and idiopathic steatorrhœa have a low indirect van den Bergh reaction, as did many of Dr. Goodhart's cases, suggesting that there is less disturbance of pigment metabolism than in the idiopathic type. Poikilocytosis is not a marked feature of the stained films and hydrochloric acid is frequently present in the gastric juice or returns after treatment. The anæmia of sprue, tropical anæmia, and idiopathic steatorrhœa responds as dramatically to marmite as to liver extract while Addisonian anæmia is unaffected by marmite. Marmite is a complex substance and it is not yet clear how far its action is associated with its vitamin B content. It is important that in the future all megalocytic anæmias, other than the idiopathic type, should receive adequate treatment with marmite, which is relatively inexpensive, in order to determine how far a response to the effective principle in liver is peculiar to Addisonian pernicious anæmia. Information on this point should help towards a reasonable classification and understanding of the pathology of megalocytic anæmias.

DESENSITISATION OF RHEUMATIC CHILDREN.

MANY supporters have been found for the theory that the clinical manifestations of "rheumatic fever" represent the allergic response of a subject sensitised, by previous infection, to certain strains of hæmolytic streptococci. Though by no means proven, this theory explains the facts better than any other yet put forward, and may be regarded as a base from which to attack this condition, which has hitherto been approached along purely empirical lines. It is during the recurrences that the worst damage is done, and it was first pointed out by Swift and his collaborators[1] at the hospital of the Rockefeller Institute that, granted the allergic view of the condition to be correct, the rational thing to do would be to try to desensitise the subject after the first attack, in the hope of thereby reducing the incidence and severity of later illness. The possibilities of this procedure have lately been explored by Wilson and Swift,[2] working in the Cornell University Medical School, and the results have been encouraging. They took a group of about 180 children who had suffered from rheumatic fever, and divided them into a test and a control group. The children of the test group received intravenous injections of a vaccine made up from hæmolytic streptococci isolated from a rheumatic subject; the note that atebrin is well borne in cases of quinine idiosyncrasy and in the pre-blackwater state. In Mühlens's opinion the atebrin treatment of malaria is in its ultimate results at least equal to those obtained with chinoplasmin and plasmoquine compound.

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[1] Kern, R. A.: Ann. Int. Med., 1931, v., 729.

[1] Swift, Homer F., Hitchcock, C. H., Derick, C. L., and McEwen, C.: Trans. Assoc. Amer. Phys., 1930, p. 45.

[2] Wilson, May G., and Swift, Homer F.: Studies from the Rockefeller Inst. Med. Res., Reprints, 80, 1932 (from Amer. Jour. Dis. Child., 1931, xlii., 42).

We therefore welcome this the latest addition to malarial therapeutics. The early promise of this branch of chemotherapy has already borne good fruit, and we have now been given two new and powerful remedies. But in order to estimate the exact value of atebrin in the campaign against malaria a vast amount of work will have to be done.

GRADE A HEALTH FACTS.

In a recent lecture delivered at the Royal Institute of Public Health[1] Prof. H. R. Kenwood remarked on the economy of effort and money which would result if all health propaganda could be made sound and therefore harmonious. Uniform health advice would, he said, have great weight with the public. The same thought is moving in America, as seen in the sound and vigorous attitude towards health education taken[2] by Dr. Donald B. Armstrong, a high official in one of the largest American life assurance companies. Dr. Armstrong disagrees emphatically with what he calls the "extreme individualism and pessimism" shown by Dr. Robert Hutchison at the Winnipeg meeting last summer. He is certain that health must be taught to the public, and he agrees substantially with the manner of teaching set out in a leading article[3] on Dr. Hutchison's address. Dr. Armstrong demands the presentation of health rather than disease, and of health as a basis for growth, character, and happiness. He classifies facts into three grades: scientifically certified facts; items that are probable but are not quite certain, including certainties of a previous generation which are now becoming questioned and possibilities that increasing experience is making more probable; and items extensively used as facts, especially for commercial exploitation, which are either erroneous or designedly misleading. He classes the work of Dr. Sherman and others on the vitamins as Grade A facts suitable for public examination, and he feels on fairly sure ground when teaching the value of sunlight and the dangers of communicable disease. Nevertheless, he admits difficulties in method. While to a certain extent he approves as a sound objective the slogan "Find Disease Early," he points out that the periodic health examination, though good in theory, is a very frail instrument in practice. The public is not yet educated, he says, to go to the doctor early enough; the doctor is not sufficiently interested nor able to carry out all the necessary tests, and few communities can direct the public to proper sources of such service. He holds, however, that the public should be taught not to be afraid of fact, and that health suggestion comes better from the physician on a basis of fact than through quackery and patent medicine advertisements. One of the chief needs of the community is, he thinks, a mechanism for individual guidance, and this, he suggests, could best be given by the private physician under the auspices of county medical societies. He warns medical publicists to be more cautious in their popularised forecasts. The slogans "No Tuberculosis by 1915" and "No Diphtheria by 1930" aroused great interest and effort and the fact that they were not realised caused little disappointment, but he thinks it inadvisable to prod the frail public memory too frequently with explosive health campaigns, the promise of which can hardly ever be fulfilled. While granting the necessity to be assertive and dogmatic, he adds, "There is some admitted hokum in our health educational program, and the public is in a debunking mood. Let us therefore keep, so far as possible, within the realm of the attainable." Yet he tolerates health rules such as those advising the consumption of a certain number of glasses of water a day or the enjoyment of an average of eight hours' sleep every night, the value of exercise in promoting longevity, and the necessity for brushing the teeth twice a day—justifying them by the need for being direct, simple, and dogmatic.

In the same issue of the *American Journal of Public Health*, Mr. George F. Wright, Editor of the *Montreal Star*, tells us what constitutes health news from the point of view of the lay press. He points to a fault, to which some of us may have to plead guilty—viz., a rooted objection to the presentation of medical research and discovery in an attractive form. Nobody, he says, would read an account of a discovery presented in a methodical and orderly fashion, for it would be immeasurably dull. Nevertheless, he asserts that a strict adherence to fact is the one motto which an editor is always placing before his staff. He believes that the cause of public health is best advanced by the newspaper reader getting into his brain the necessity of carrying out certain simple rules of living. For this the constant reiteration of plain truth is of some value, but the artful presentation of that truth in many varying forms counts for much more.

A PARASYMPATHETIC CENTRE IN THE HYPOTHALAMUS.

The influence exerted on metabolism and visceral activity by the two opposing divisions of the autonomic nervous system—the sympathetic and parasympathetic mechanisms—has long been recognised. The precise situation of the centres controlling these mechanisms, however, is only just coming to light. A considerable amount of indirect evidence has pointed to the hypothalamic grey matter in the floor of the third ventricle as the seat of the sympathetic nucleus, and direct proof has recently been forthcoming, in the demonstration by J. Beattie, G. R. Brow, and C. N. H. Long,[1] of Montreal, of a tract of fibres linking up this region of the brain with the lateral horns of the grey matter of the spinal cord. About the position of the parasympathetic centre there remains some doubt. Harvey Cushing[2] believes it to be situated, like the sympathetic nucleus, in the hypothalamus, and has shown that injection of pituitrin into the ventricles of the brain of human subjects leads to increased salivation and to increased mobility and hypersecretion of the stomach. J. Beattie[3] has just reported, in outline, some experiments on animals which support Cushing's suggestion. Beattie stimulated the anterior portion of the hypothalamus electrically and studied the effect on the stomach, in some instances by direct examination of the exposed organ, in others by suturing electrodes into the stomach wall and obtaining graphic records on electrocardiographic plates. He found that hypothalamic stimulation causes increased peristalsis

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[1] Jour. State Med., March, 1932, p. 125.
[2] Amer. Jour. Pub. Health, March, 1932, p. 271.
[3] THE LANCET, 1931, i., 357.

[1] Proc. Roy. Soc., B, 1930, cvi., 253.
[2] Proc. Nat. Acad. Sci., 1931, xvii., 163, 239.
[3] Canad. Med. Assoc. Jour., March, 1932, p. 278.

PANEL AND CONTRACT PRACTICE

Distribution of the Central Pool.

THE central pool, it may be recalled, is the sum of money represented by the number of insured persons in the country multiplied by the capitation fee. The number of insured persons must in the nature of things be always varying owing to deaths, new entrants into insurance, members becoming dis-entitled to benefit, and so forth. The figure has therefore to be arrived at by actuarial calculation by the Government Actuary. The method employed has been tested on behalf of the profession by an independent actuary and has been proved to be a sound method of calculation. As a further safeguard it has been usual for the Distribution Committee (on which are representatives of the Government Actuary, of the Ministry of Health, of the Insurance Acts Committee, and of rural practitioners) to meet annually to advise the Minister of Health as to the method of distributing the central pool amongst the various insurance committees.

The Distribution Committee did not meet formally this year, but figures have been compiled at the Ministry of Health from returns given by insurance committees and others show that for 1931 the calculation of mileage grants to rural areas have been based on recently obtained figures of claims instead of as last year on those for 1927. Scrutiny of these figures shows that 14 counties (Bedfordshire, Cornwall, Durham, Essex, Herts, Isle of Ely, Kent, Lancs, Rutland, Sussex East, Sussex West, Worcestershire, Yorks North, Westmorland) have on each occasion increased their mileage claims, whilst 11 counties (Bucks, Cambs, Isle of Wight, Lincoln Lindsey, Oxford, Wilts, Hereford, Leicestershire, Notts, Salop, Bury) have on each occasion lost a proportion of that grant. Figures of other committees have not altered much one way or the other. In 1930 the Distribution Committee advised that units should be calculated from the doctor of choice and not from the nearest available doctor. Insurance committee returns had previously varied on this point.

1 unit is	obtained for each insured *person living over*	2 miles and under 3	from his doctor.
2 units are		3 " " " 4	
3 " "		4 " " " 5	

The total mileage grant is £250,000, divided proportionately amongst the insurance committees according to the number of units claimed. There is an additional allowance for specially difficult places.

The apportionment of the central practitioners' fund for the year is arrived at by adjusting the index register apportionment of each insurance committee. The figures supplied by the Ministry are expressed as a percentage of the whole insured population—e.g., London has 12·9748 per cent. of the insured population, and therefore of the fund. The first adjustment of this is for temporary residents. Some committees, e.g., those in seaside resorts, have a percentage addition. Others, e.g., London, have a deduction made for temporary residents, more of whom they send away to other committees than they receive from them. The deduction for London for 1931 was 0·0714 per cent. Deductions are also made for institutions recognised under the Insurance Acts, for mercantile marines, and for persons who are allowed to make their own arrangements. London has no institution deduction, but it loses 0·0356 per cent. for mercantile marines, and 0·0091 per cent. for "own arrangers." In this way a net figure is arrived at for each committee, the London net figure becoming 12·8587 per cent. These net figures added together do not make 100; a final adjustment is therefore made so that they do become percentage figures, and this adjustment makes London's final figure 13·0425 per cent.

These figures illustrate how the character of insurance practice varies in different localities, and how insurance committees vary in their decisions upon "own arrangers." The Ministry of Health also supplies the Distribution Committee with the quarterly count during the year of each insurance committee index register. These figures show the movements of the insured population from one area to another, and where the population is going out of insurance. In the county boroughs the tendency is as follows:—

Count going up—plus.	Count going down—minus.	
Brighton.	Barrow.	Bradford.
Blackpool.	Birkenhead.	Burnley.
Hastings.	Bristol.	Halifax.
Southend-on-Sea.	Newcastle.	Huddersfield.
Southport.	East Ham.	Middlesboro.
Birmingham.	West Ham.	Oldham.
Manchester.	West Hartlepool.	Nottingham.
Croydon.	Bolton.	Preston.
Oxford.	Bootle.	
Worcester.		
Exeter.		
Portsmouth.		

The last set of figures supplied to the Distribution Committee shows the amount paid per name on doctors' lists for each committee. The figures this year relate to 1930, and so do not take into account the 10 per cent. deduction. Committees with a payment of less than 9s. evidently have more names on their index than should be there: presumably duplication is going on and the necessity arises for the "clearance" of the register. The same thing may be caused by the allocation to doctors in the area of all names who have not chosen a doctor; this, however, is not a common practice amongst insurance committees. Those committees whose payment per capita is over 9s. are frequently those whose locality makes them likely to receive many temporary residents. The figure for London is 9s 1d.; for Blackpool, 10s. 2d.

The total number of insured persons for last year on the central register was 14,896,630, being the mean of four quarters' counts. The total fund available for the central pool would have been £6,638,051, but with 10 per cent. deduction in respect of the four quarters the amount available for the year was £6,467,625. With 10 per cent. deduction for the whole year the fund is estimated at £5,800,000.

References to Regional Medical Officers.

"Both personal experience and an accumulating mass of correspondence in the medical press," writes Rural Panel, "bear witness to a widespread and growing discontent with the present system by which the selection of patients to be referred to the regional medical officer is governed. When the panel practitioner finds that he is requested to provide information about patients who have left the district weeks before, who are moribund, who are 'referred' after three days of an illness such as 'acute tonsillitis,' or who have been 'referred' so repeatedly that they 'sign off' in disgust though incapable of resuming work, he not unnaturally blames the person who is ostensibly responsible for the selection—i.e., the regional medical officer.

injections were given intravenously, beginning with a dose of 250,000 and working up to 10,000,000; the inoculation was done during two successive years: in the first throughout the late summer, autumn, winter, and early spring; and in the second in winter and early spring only. A comparison of the case-histories of the two groups shows a significant diminution both in the incidence and severity of rheumatic manifestations in the treated group. The investigation is of interest from several standpoints. Apart from its value as an indication of a method of attack upon one of the most disabling of all diseases, it draws attention afresh to the allergic factor, consideration of which has been almost swamped of late by concentration upon "infection." Further, it emphasises a side of vaccine therapy which has been comparatively neglected. Asked what they expect to do with a vaccine, most medical men would probably assert that they hope to "immunise" the patient. Certainly the possible uses of desensitisation are too often overlooked.

HOUSING IN KENSINGTON.

FEW boroughs have such an abrupt division of amenities as Kensington, where the southern half is a superior residential quarter and the northern an area of overcrowded tenements. The recent survey of housing in Kensington made by Irene T. Barclay and Evelyn E. Perry quotes repeated examples of the following kind:

"Two basement rooms, the back one damp and dark. The family here is a husband and wife, a boy of 13 and girls of 11, 10, 8, 5, 3, and 1—nine persons. The tenant has regular work and an average wage of £3 5s. per week. He wants open air and a garden and is anxious to go to an outlying L.C.C. estate if he can have a cottage at a rent within his means. . ."

In a foreword to the survey by Mrs. Victoria de Bunsen and Major-General Neill Malcolm the problem is described as overcrowding aggravated by bad basements. At the 1921 Census the Registrar-General found that the number of persons living at a room-density of more than two per room was no less than 26,456, and the surveyors conclude that the whole building, carried out by combined public and private activity since the war, has only served to pr[illegible] from becoming worse. Legal [illegible] on air space per person, is not the rule, but the inadequacy of the standard adopted can be appreciated from the fact that it is possible for a parent and eight children to live in two rooms of an ordinary Kensington house without being legally overcrowded; but on the Registrar-General's standard overcrowding is present in 76 per cent. of cases. It is, apparently, seldom possible for a husband and wife to occupy the same bedroom without involving the family in a breach of the by-laws relating to separation of the sexes; and a living room not used also as a bedroom is a rarity. The chief obstacles to any building programme sufficiently large to relieve the situation are, of course, the scarcity of sites and lack of funds. The financial requirements could be covered by quite a small addition to the rates; a building scheme recently approved by the borough council would mean an addition of only twopence a year to a house rated at £100. The scarcity of available sites does not seem to be insuperable, and the surveyors think it would be possible to effect a very great improvement within a few years. Many of the existing buildings in a street named in the report are insanitary and verminous and have been condemned. The report of the school doctor shows that children coming from this street are subnormal in health, and compare unfavourably with those from other streets, but while there is no alternative accommodation for the 58 families inhabiting the street it cannot be pulled down. In the words of Dr. Leonard Huxley, writing recently in the Cornhill Magazine, "why not avert the blow instead of healing the wound? We tend the sickly but do not create the healthy—we punish wrongdoers but see the good seed swamped in the morass—we educate, but there is no chance of knowledge spreading in such hopeless surroundings."

The Kensington Housing Association is holding an open meeting at the Kensington Town Hall on Monday, April 18th, at 8.15 P.M., at which Dr. Raymond Unwin will speak on the town planning of Kensington.

COMPULSORY STUDY OF THE HISTORY OF MEDICINE.

Prof. W. Szumowski of Cracovia, Poland, recently read a paper at the Eighth International Congress of the History of Medicine advocating the compulsory teaching of the history of medicine in the universities of the world. Such teaching, he thinks, should be given to the medical student during the first year of his training and should be rendered effective by an examination. The suggestion, no doubt, is good in theory but is impracticable in practice, at any rate in Great Britain. The difficulties of educational authorities in dealing with the medical curriculum are acute, and the introduction of another compulsory subject would not be contemplated by any university or corporation. A few students having a bent towards the historic or antiquarian side of their studies will always show an interest in the history of medicine, but its teaching should be post-graduate and its study left to a more mature age, when leisure, curiosity, and a cultivated taste have developed an appetite for literary knowledge; and by this time formal instruction becomes unnecessary, while compulsory study has never produced satisfactory results in England when voluntary efforts have often been fruitful. The Section of History of the Royal Society of Medicine provides a meeting-place where historical comment and the outcome of historical research can be ventilated, while students' clubs, formed in connexion with their own hospitals or elsewhere, give opportunity for similar discussions among the younger generation.

Summer Time will commence in Great Britain, Ireland, the Channel Islands, and the Isle of Man on Sunday morning next, April 17th, at 2 A.M., when the hands of timepieces should be advanced one hour. It will end on Sunday, Oct. 2nd.

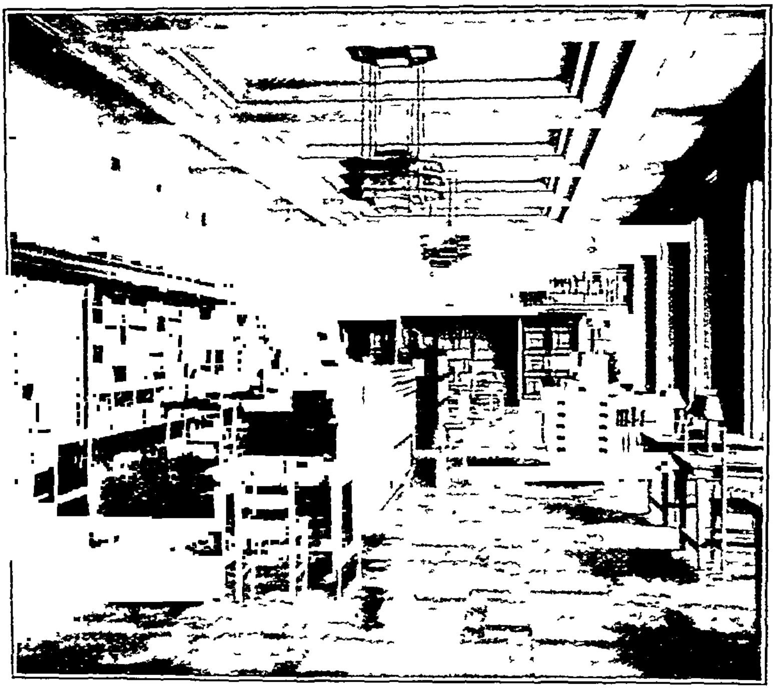
SCARCITY OF HOSPITAL MAIDS.—The matron of the Enfield and Edmonton Joint Hospital reports a difficulty in obtaining maids, most of whom are quickly incapacitated by illness, the result of the "desperately hard" work. Lack of accommodation makes it impossible to employ a larger number of girls. The difficulty is to be met by employing married women when needed—single women will not apply for daily work—and by giving three weeks' annual holiday instead of a fortnight. It was stated that other hospitals are experiencing a similar difficulty.

SPECIAL ARTICLES

THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

THE Court of Governors of the London School of Hygiene and Tropical Medicine has elected Sir Austen Chamberlain as chairman of the Governors and after the ceremony, which took place on Thursday, April 7th, Sir Austen presided at a luncheon given in the library of the School.

Sir Hilton Young proposed the health of Sir Austen, and pointed out his peculiar fitness to fill the post, and meet the responsibilities thus assumed. His appointment, said Sir Hilton, was the outward and visible sign of the association of his family with the development of tropical medicine. He recalled the original work of their chairman's father, Joseph Chamberlain, and the activities of his brother, Mr. Neville Chamberlain, who, when Minister of Health, laid the foundation-stone of the premises in which they were sitting. Speaking himself as Minister of Health, Sir Hilton said that the fundamental benefits which the Empire could bestow upon its dependencies were two, peace and health. The provision of medical and hygienic services in the colonies promoted these two objects, but the services could only be carried on by the setting up and maintenance of active scientific research.



Library of the London School of Hygiene.

Sir Austen, in replying, was reminded that 40 years ago his father, at the inaugural meeting of the School, had pointed out that the greatest enemy of the Empire in its dependencies was not the survivals of barbarous customs, nor the hostility of opposing chiefs, nor the geographical and natural attributes of countries where nature had held unfettered sway; it was the incidence of disease which destroyed or weakened the personnel of those engaged in the labours of colonisation, killing many and weakening or shortening the lives of very many more. He read the following extract from the *Lagos Standard* of September, 1898:—

> "There is no doubt that something should be done to relieve the grave-diggers from the strain of the work to which they are continually subjected. The demands of a constantly increasing death-rate, which has caused the cemeteries to be enlarged, make it necessary that the number of grave-diggers should be increased. No holidays—at it from 6 A.M. to 6 P.M. every day, Sundays included, for the grim Reaper is ever busy."

"While I do not," he said, "recommend Lagos as a health resort the picture in 1898 enables us to understand the gulf which had been traversed during 40 years. The huge improvement in the death-rates of various tropical dependencies can only stimulate further work, and how vast that work is would be obvious when the long list was recollected of diseases which still infested these countries." It was true, he said, that many of the old problems were no longer insoluble, and that we could look forward to the eradication or the rendering innocuous of pestilences which once were a scourge; but in tropical disease there was urgent work yet to be done, both humanitarian and utilitarian. And as the diseases were conquered the development of trade would follow. He next referred to the need of turning attention to the problems of health at home, for it would be wrong, he said, even on this occasion, to look only at tropical medicine. On all sides there was a field of inquiry and research which grew larger with every discovery, while every discovery in one department of medical science helped not some particular area or some particular country but the world at large. He knew that the School would receive the coöperation of other countries in endeavours made for the general service of mankind. Sir Austen concluded by proposing the toast of Sir Holburt Waring, the retiring chairman of the Court who had for eight years assisted in the developments of the institution.

Sir Holburt Waring briefly replied.

A large and representative gathering of guests was present and among the telegrams of regret for inability to be present was one from Sir Henry Wellcome, sent from New York, which ran as follows: "Cordial greetings and best wishes for the continued success of the noble work founded and organised by Joseph Chamberlain and Patrick Manson. Deeply regret absence."

"It now has been made clear, however, that the choice of whom to 'refer' is not in any way under the control of the R.M.O., but rests entirely in the hands of the approved society concerned. Moreover, the practice of different societies varies enormously. In an investigation by the Reading Panel Committee it was found that 70 per cent. of the 'references' came from three industrial societies, while less than 1 per cent. were 'referred' by friendly societies. In one case a doctor wished to refer a patient to the R.M.O. with a view to getting further advice on his condition, and was told that the society in question had never 'referred' one of their members yet, and didn't intend to do so! Again, one society is alleged to refer patients without any consultation with their local officers at all. It is also alleged, incredible as it may seem, that Form R.M. 2 may be sent out by the society to the panel practitioner direct, in spite of the fact that it is addressed from and signed by the R.M.O. This is supported by the fact that the interval between the issue of the first certificate and the 'reference' is sometimes too short—e.g., two days—for it to have been through the hands of the R.M.O.

"All this does not mean, presumably, that the system has been changed, but that since the trouble about 'excessive certification' arose, and since the publication of the now notorious I.C. 329 references to the R.M.O. have increased to such an extent that the panel practitioner, instead of regarding them as a rather bad joke, feels like a babe in the wood being buried alive by showers of R.M. twos and threes. He is therefore beginning to inquire as to what particular robin is responsible for this embarrassing fate. The results of these inquiries, if correct, are certainly surprising, and throw a new light on the position and functions of the regional medical officers. These gentlemen, it appears, instead of being the principal villains of the piece recede into the status of hired bravoes, a position which they doubtless feel as acutely as anybody.

"Seriously, however, the conclusion cannot fail to be drawn that a very great deal of time and some money is being wasted, and it seems an opportune moment for an inquiry by the Ministry into the whole system."

National Formulary.

The London Panel Committee at its last meeting returned to a consideration of the directions for use printed with the formulæ in the National Formulary. A motion submitted by the pharmacy subcommittee, "that the Insurance Acts Committee be informed that the Panel Committee is of opinion that instructions to pharmacists for the administration of mixtures should be deleted from the next issue of the National Formulary," was lost. It was felt that the convenience of many panel prescribers should not give way to the difficulties of the few who have trouble with the directions.

Thermogene Wool.

The same subcommittee reported that the London Insurance Committee, under Article 4 (1) of the Medical Benefit Amended Regulations, 1930, has referred to the panel committee for consideration an appeal against its decision that the substance ordered (thermogene wool) did not form part of medical benefit; in other words, that this was an appliance and not a drug. The appeal was heard by the subcommittee, representatives of the insurance committee and of the Ministry of Health being present. The appeal was allowed on the ground that the action of the capsicum content of the wool was the chief reason for ordering this substance, and the action of capsicum was undoubtedly that of a drug. A court of referees may be set up to make the final decision.

Interpretation of "Personal Service."

The ethical subcommittee of the London Panel Committee has considered the case of the elderly practitioner and his assistant mentioned in these notes some weeks ago.[1] This case, in accordance with regulations, was referred to the panel committee by the insurance committee after the latter had passed a resolution that permission to employ an assistant should be withdrawn. The panel committee, after pointing out that there had been no complaint by any insured person and that the regulations on personal service—namely, continuity of treatment and availability of principal if asked for—had been carried out, passed the following resolution:—

> That the committee do inform the insurance committee that although it strongly objects to the principle of "farming out," after investigation it is of the opinion that the conduct of this practice does not come within that category. It considers that the insured persons concerned have not suffered in any way by reason of the manner in which the practice is being conducted.
>
> The committee recognises that whilst the principal practitioner does not take a very active part in the conduct of the practice, acting chiefly in a supervisory capacity, he is undoubtedly available for consultation and supervision, and the results of this arrangement are in no way detrimental to the interests of the insured persons concerned, the principles of continuity of treatment and availability on request having been preserved. The committee is further of opinion that it would be unreasonable to withhold permission to employ an assistant in this case, and would point out that such action would be injurious to the practice, as it would entail a fresh practitioner being brought in, the present assistant being unwilling to accept a partnership.

The matter will now presumably go to the Ministry for final decision.

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[1] THE LANCET, Feb. 27th, p. 478.

British Empire Cancer Campaign.—In the absence of Lord Reading, Sir John Bland-Sutton presided at the quarterly meeting of the Grand Council of the British Empire Cancer Campaign held in London on April 11th. The following grants, totalling £10,000, were made in furtherance of cancer research: £500 to St. Mark's Hospital, £2500 to St. Bartholomew's Hospital, £1500 to the Cancer Hospital, and £5500 to the Middlesex Hospital. The nomination of Mr. W. Sampson Handley to act as the representative of the Queensland Cancer Trust on the Grand Council, and the election of Dr. G. Fildes, as an additional member of the Radiology Committee, which acts jointly for the Medical Research Council and the Campaign, were confirmed. The report of the judges of the 1931 Garton prize essays on the Early Diagnosis of Cancer was received. The judges reported that in their opinion none of the essays was worthy of the prize and the Council accordingly resolved that the prize for 1931 be not awarded. Dissertations for the next Garton prize, on the Biological Effects and Mode of Action of Radiations upon Malignant and other Cells, are due to be received not later than Dec. 31st, 1933. Arrangements have been made in collaboration with the Queen's Institute of District Nursing and the public health section of the College of Nursing, whereby copies of the Campaign's official publication "The Truth about Cancer" will be made available for the active members of those organisations.

Hospital Sweepstakes and Public Assistance.—In consequence of the Louth County Infirmary having received £30,000 from the Free State Hospital Sweepstakes the Louth county council has refused to continue its annual subscription of £1400. The council contends that the infirmary now has plenty of money, and is likely to receive more from the recent sweepstake on the Grand National. The infirmary's reply is that it is no better off than before, since the new invested money merely replaces the public grant. The county council's rejoinder is that for many years it has paid £700 in excess of its legal liability because of the infirmary's urgent need of money, and that it ought to be credited with the excess now that the hospital is no longer financially embarrassed. The infirmary claims that under an Act of Parliament it is entitled to a minimum sum of £320 per annum.

REFERRED PAIN IN VISCERAL DISEASE.

To the Editor of THE LANCET.

SIR,—It is plain from Mr. D. Ligat's letter in your issue of April 2nd that he uses the term "viscero-sensory reflex" in a sense very different from that given to it by Mackenzie, its originator. After asking whether a viscero-sensory reflex as described by Mackenzie exists, or whether I am right in asserting that it does not exist, he quotes a passage from my book on Abdominal Pain which he believes to involve a refutation of my own argument, and remarks at the end of his quotation, "Surely Mr. Morley here postulates a true viscero-sensory reflex?" But the passage he quotes describes the splanchnic inhibitory reflex, which has nothing in common with the mechanism conceived by Mackenzie as the viscero-sensory reflex. Mackenzie defines his viscero-sensory reflex as superficial pain and hyperalgesia referred to the somatic sensory nerves of the skin and subcutaneous tissue of the abdominal wall, resulting from violent stimulation of the afferent nerve-endings in the viscera. Viscero-sensory "radiation" would have been a better term than viscero-sensory "reflex," because Mackenzie's conception was not that of a true physiological reflex arc. But I have used Mackenzie's term because it is generally understood, and I have used it strictly in Mackenzie's sense throughout. I suggest to Mr. Ligat that in discussing the validity of Mackenzie's theory he must begin by accepting Mackenzie's definition of that theory. The extract from my book that Mr. Ligat quotes is singularly unfortunate for his argument, in that it begins, "When we explore an abdomen under a general anæsthetic . . ." An unconscious patient could hardly evince Mackenzie's viscero-sensory reflex or any other pain mechanism.

I am, Sir, yours faithfully,

Manchester, April 8th, 1932. JOHN MORLEY.

THE DURATION OF THE RED LOCHIA.

To the Editor of THE LANCET.

SIR,—I have a great admiration for the work done by Dr. Remington Hobbs in the treatment of puerperal sepsis by glycerin drainage, but I feel that his efforts to establish glycerin as the panacea of nearly all obstetric and of many gynæcological conditions is being carried too far. Already to my mind it enjoys a reputation which it does not altogether deserve.

He states that prolongation of the lochia after the seventh day is due to sepsis of the uterine mucosa, and that in cases of subsequent peritonitis a history will be found of prolonged lochia for some weeks. In my experience one can fix no day between the seventh and the twelfth when the cessation of lochia can be regarded as abnormal. The amount and duration of lochia in a normal puerperium depends on the type of labour, upon bleeding during labour, and upon the size of the infant and of the placenta. Any loss after the twelfth day should be regarded as secondary post-partum hæmorrhage, and is in the vast majority of cases due to retained products, uterine displacements, tumours, and general diseases, and should be treated as such by an exploration of the uterus under anæsthesia. It is unwise to postulate the seventh day as that on which the uterus must cease its perfectly normal and beneficent drainage, and to begin manhandling it as septic is mischievous.

Again Dr. Hobbs claims, almost with pride, that out of 340 consecutive deliveries, he detected 80 as being septic. The fact that 40 were apyrexial (simply draining their uteri as Nature intended them to do) is in my opinion no indication for treatment; it is creating a disease which does not exist, and I suppose will later supply a series of statistics illustrating the curative powers of glycerin.

I am, Sir, yours faithfully,

A. MORRIS JOHNS.

Wimpole-street, W., April 7th, 1932.

USE OF TUBERCULIN IN DIAGNOSIS.

To the Editor of THE LANCET.

SIR,—The usefulness of Dr. D'Arcy Hart's report on the Value of Tuberculin Tests should certainly not be minimised, but I venture to join in the protest which is being ventilated in your columns against his condemnation of the Pirquet test. It so happens that, at an institution where I was previously assistant medical officer, a number of cases on which I had performed a Pirquet test were later tested by the Mantoux method by Dr. D'Arcy Hart. The number of cases tested by both methods was sufficient to enable me to compare the relative value of the two tests. In nearly every case the results of the Mantoux and the Pirquet agreed and were compatible with the clinical findings. Furthermore it has been my experience to see on more than one occasion a fairly marked local reaction accompanied by slight fever as a result of the Mantoux test, even in skilful hands. This has led me to prefer the Pirquet test, for any reaction which causes inconvenience to the patient is not justified in a test which may be, but is not always, of major clinical importance.

I am, Sir, yours faithfully,

M. C. WILKINSON.

Black Notley Sanatorium, Essex, April 9th, 1932.

CHRONIC DUODENAL STASIS.

To the Editor of THE LANCET.

SIR,—In the leading article on this subject in your last issue (p. 781) you refer to a paper[1] written by us two years ago in which we essayed to prove the existence of a syndrome in children owing its origin to a mild degree of duodenal obstruction from congenital arterio-mesenteric compression. Your mention of this work encourages us to state that we have recently made two additional observations which seem to support our thesis. In one case there was unequivocal evidence post mortem of congenital ileus; and in another we were fortunate enough to obtain radiographic evidence of duodenal stasis which we had hitherto failed to demonstrate. A second paper from us, dealing with this difficult subject, in which it is so necessary not to go further than the facts warrant, will appear in the April issue of the *Archives of Disease in Childhood.*

We are, Sir, yours faithfully,

REGINALD MILLER,

London, April 9th, 1932. H. COURTNEY GAGE.

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[1] Arch. Dis. Child., 1930, v., 83.

CHELTENHAM HOSPITALS.—Last year the Cheltenham General and Eye Hospitals treated 2034 in-patients to a conclusion and attended to 9756 new out-patients. The average cost of each patient treated to a conclusion was £8 6s. 11½*d.*, and the weekly cost of each £2 16s. 4½*d.*, a small increase. Of the income of £19,609 (deficit £674) £7400 was derived from workers' contributions.

CORRESPONDENCE

THE GALL-BLADDER AND CARDIAC PAIN.

To the Editor of THE LANCET.

SIR,—I am delighted to find that Dr. C. H. Miller is calling attention to the association of cardiac pain with disease of the gall-bladder. The connexion is not yet generally appreciated. I propose in the near future to deal fully with my experience of the relation of gall-bladder infections to troublesome cardiac disease. It has been my lot on many occasions to find that "heart disease" has been the reason given for refusal of the benefits of surgical treatment to patients suffering from cholelithiasis. In such cases it is a common experience to find that removal of the gall-bladder is followed by a restitution of the heart to a normal condition, or by a very considerable measure of relief to cardiac symptoms. Sir James Mackenzie was first responsible for my interest in this subject, by asking me to operate upon a number of his "cardiac" patients. I removed the gall-bladder and the "heart disease" not seldom disappeared. Disease of the myocardium may often be regarded as the strongest indication for surgical measures. The relationship between infections of the gall-bladder and cardiovascular disease has hardly received the attention it deserves since Sir James Mackenzie and Sir Humphry Rolleston so clearly described it.

I am, Sir, yours faithfully,

Portland-place, W., April 11th, 1932. MOYNIHAN.

ADSORPTION OF IODINE BY ACTIVATED CARBON.

To the Editor of THE LANCET.

SIR,—The note by Mr. B. A. Adams in your issue of April 2nd (p. 724) is based on the following two assumptions, both of which, we submit, are open to considerable doubt.

1. That the prevalence of goitre is associated with the iodine content of water-supplies.
2. That water plays a material part in the supply of iodine to the human body.

The questions concerning iodine, its distribution and relationship to goitre, have recently been exhaustively studied by Dr. J. B. Orr and his co-workers at the Rowett Research Institute, Aberdeen, and two valuable reports incorporating their findings and tentative conclusions have been published by the Medical Research Council (Special Report Series No. 123, 1929, and No. 154, 1931). From these reports, which consider both the information accumulated to date from all parts of the world, and also the recent investigations by Dr. Orr in Great Britain, we learn :—

1. That analysis of the water from the supplies of a number of urban and rural areas in this country showed no correlation between the concentration of iodine in the water and the incidence of goitre in the area from which it came.
2. That the iodine content of water-supplies, especially surface waters (the most likely to be treated by activated carbon), is small compared with that of many foodstuffs.

The part generally played by drinking water in supplying iodine is very small and probably can be entirely neglected for, in a goitrous area, the deficiency of iodine in all the foodstuffs cannot be made good by that in the water, and in a non-goitrous area the amount of iodine in the water constitutes so small a proportion of the whole in all articles of diet that its absence would not be felt.

In our experience activated carbon has proved of great value in the removal of certain odours and tastes that occasionally appear in the river-derived water-supplies and which resist all other measures of treatment. In these cases, therefore, and in view of the information at present available concerning water-supplies, iodine and goitre, we are of opinion that activated carbon should not be withheld on account of its power of removing iodine. In view of the technique employed by Mr. Adams and the inaccuracy and indelicacy of all known methods for the estimation of iodine in water and foods, it is doubtful whether he is justified in arriving at the conclusion, that "all these forms of iodine were removed invariably and completely by treatment with activated carbon."

The function of a water authority is to supply an abundance of pure water which is colourless, odourless, and palatable, and the use of activated carbon may be necessary to produce these latter conditions. The supply to the human body of such essential substances as iodine, calcium, iron, vitamins, &c., is properly carried out by a well-arranged diet, and water-supplies are, as far as can at present be told, quite unimportant in these respects.

We are, Sir, yours faithfully,

JOHN F. BEALE,
ERNEST SUCKLING.

The Counties Public Health Laboratories, 91, Queen
Victoria-street, London, E.C., April 8th, 1932.

THE TOLL OF THE ROADS.

To the Editor of THE LANCET.

SIR,—It might well be supposed that members of the medical profession would have a particular interest in the prevention of unnecessary death and disablement, yet from the absence of further comment on this topic since the interesting letter from Dr. Galbraith on Jan. 23rd, it must be assumed that their attitude is the same as that of the general public, which apparently may be expressed as follows: (1) The number of road accidents is not excessive. (2) In the great majority if not in all cases, pedestrians, cyclists, or other non-motorists are to blame. (3) If occasionally a motor-car is at fault it is regrettable but inevitable, and is the natural price to pay for progress.

(1) is a matter of opinion ; the figures are published from time to time, and are now apparently upwards of 7000 killed and 177,000 injured per annum in Great Britain.

(2) is obviously absurd, for many accidents occur in which one or more motors alone are concerned, while many pedestrians are killed on the pavements. Further, it draws a line between motorists and pedestrians and suggests that the former are infallible, which is impossible ; for motorists are merely pedestrians in a position of responsibility for which they may be quite unfitted.

As regards (3), it would be interesting to hear the views of the medical profession on the propriety of regarding the mere multiplication of the means of mechanical transport as "progress," without regard for the need for this transport or the use to which it may be put.—I am, Sir, yours faithfully,

Carlton Hill, N.W., April 6th, 1932. R. JOHN CLAUSEN.

scarlet fever, and, on one occasion, he continued e debate over three weekly meetings." Dr. James lieved that hospitals tended to spread scarlet ver, and he was strongly against the massing of ildren in large public schools. He opposed medical spection of school-children by whole-time medical icers, preferring that the work should be done by e family practitioners. As he was physician to e schools of the Edinburgh Merchant Company s views led to a serious official situation. It was timately resolved by the company's agreement th the Scottish Education Department that the ork should be done by the medical officers of the hool board, and this system has been operative r over 20 years. He also had very definite views n tuberculosis, holding a theory that the Timothy ass bacillus was an active factor. He was always ady, at casual meetings, to argue the case. He as also keenly interested and well informed on ciological problems, and his occasional addresses howed that he was alive to the social aspects of edicine.

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ROYAL ARMY MEDICAL CORPS.

Maj. H. S. Blackmore, Res. of Off., R.A.M.C., relinquishes his appt. under Art. 520 (b), Royal Warrant for Pay and Promotion, 1831.

Maj. R. W. Chapman retires, receiving a gratuity.

TERRITORIAL ARMY.

Capt. H. V. Morlock resigns his commn.

Lts. C. R. L'E. Orme and J. G. Weston to be Capts.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. T. P. Puddicombe, having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

The undermentioned officers relinquish their temp. commns.: Capts. R. C. Goulatia and S. K. Ganguli.

ROYAL AIR FORCE.

Flying Officer Hyman Ruben Clein is promoted to the rank of Flight Lieutenant.

RESERVE OF AIR FORCE OFFICERS.

Flight-Lt. J. J. Quinlan relinquishes his commission on appointment to a commission in the Indian Medical Service.

THE COLONIAL SERVICE.

Dr. E. V. W. Mellard is appointed Surgeon at Jamaica; Dr. C. H. Howat, District Medical Officer at Cyprus; Dr. J. S. Cramer, Supernumerary Medical Officer, Leeward Islands; Dr. H. B. Boucher, Medical Officer, Gambia; Dr. J. W. Murdoch, Medical Superintendent Central Mental Hospital, Federated Malay States; and Dr. A. H. Owen, Director of Medical and Sanitary Services, Tanganyika Territory.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

RESTRICTION OF THE PRACTICE OF MEDICINE BY FOREIGNERS.

THE disquieting influx of foreign medical students and doctors into France, to which I have referred from time to time, has culminated in protective legislation which is likely to put a most effective barrier to future invasions of this kind. A Bill dealing with this problem was passed on Feb. 29th by the Chamber of Deputies without discussion. As it had already been approved by the Senate, there is no prospect of its being set aside. It remains, however, to be seen how far its conditional clauses will react to the circumstances of individual cases. According to the first article, no one may practise medicine in France unless he is a French subject or a native of a French Protectorate. Nor may he practise medicine without a State diploma. But in the case of those countries in which French doctors are allowed to practise, applications may be made to the French Government for dispensation in certain instances from the obligation of becoming a naturalised Frenchman. With regard to such countries, it is presumed that an equilibrium will be established in the sense that approximately as many Frenchmen as foreigners are allowed to practise in each other's countries. The second article concerns the preliminary studies and examinations which may be made obligatory on newcomers even if they already possess the medical diploma of some other country. As for the foreign medical student, the third article rules that no exemption from preliminary studies shall be made, however prolonged his studies abroad may have been. In the fourth article, surgeon-dentists with foreign diplomas are obliged, if they wish to practise in France, to pass the same examinations that are required of French students seeking a diploma in dentistry. Not more than a year of preliminary studies can be dispensed with by the would-be surgeon-dentist. As for the foreign doctors and dentists already practising in France, they must submit their diplomas for verification within three months.

AMALGAMATING EDINBURGH HOSPITALS.—A meeting of the subscribers to the Edinburgh Royal Maternity and Simpson Memorial Hospital recently unanimously agreed to the amalgamation of the institution with the Edinburgh Royal Infirmary. The agreement will require the sanction of Parliament. Last year the Simpson Hospital dealt with over 44 per cent. of the births in Greater Edinburgh, and 3467 cases were attended. The building of a new hospital on the site of George Watson's College will shortly be begun.

DONATIONS AND BEQUESTS.—Mr. Edwin Hoyle, of Old Hall Hotel, Buxton, Derbyshire, bequeathed £1500 to Ancoats Hospital and Ardwick and Ancoats Dispensary, Manchester; £1000 to St. Mary's Hospitals, Manchester; £500 to Henshaw's Institution for the Blind, Manchester; £500 to St. Dunstan's Hostel; £300 to the Devonshire Hospital, Buxton; £200 to the Dental Hospital, Manchester; £200 to Manchester and Salford Blind Aid Society; £100 to the Buxton and District Cottage Hospital; and the residue of the property as to one-fifth to the Royal National Lifeboat Institution, and four-fifths to the Manchester Royal Infirmary and Dispensary.—Mrs. Margaret Brown Cade, Kingston, left by will £1000 to Hull Royal Infirmary, and £500 to Hull and Sculcoates Dispensary.—The late Mr. Edward Brake, of Bath, left, on his wife's death, £1000 to the Royal Bath United Hospital, and £1000 to the Cancer Fund of the Middlesex Hospital, London.

OBITUARY

ALEXANDER L. URQUHART, M.B. Edin.,

PROFESSOR OF PATHOLOGY IN THE EGYPTIAN UNIVERSITY.

THE Faculty of Medicine of the Egyptian University has suffered a severe blow in the loss of its professor of pathology, Prof. A. L. Urquhart, whose death we announced last week.

Alexander Lewis Urquhart, son of the late Dr. A. R. Urquhart, of Perth, was born on April 15th, 1887. He was educated at Edinburgh Academy and thence proceeded in 1906 to the University of Edinburgh, where he was at first more marked out by his proficiency at games than at work, being a full exponent of football, cricket, and golf, especially the first. In 1911 he graduated as M.B., and in the same year entered the Royal Army Medical Corps. Between then and the outbreak of war he served for most of the period as demonstrator in the R.A.M.C. College at Millbank, and while thus employed he obtained the D.P.H. diploma of the Conjoint Board. Soon after the commencement of the war he was sent to France in command of a motor ambulance convoy. After a short time in this position he was transferred to the Macedonian front in charge of the main pathological laboratory, and was twice mentioned in despatches. For his services in the war he was awarded the O.B.E.

On his return to England in 1919 he was offered by Prof. L. S. Dudgeon, under whom he had worked in Macedonia, a post in the pathological department of St. Thomas's Hospital, and severing his connexion with the R.A.M.C. he accepted the offer. From then till 1927 he acted as lecturer in pathology at St. Thomas's Hospital, and Curator of the Museum. But in 1927 he was offered and accepted the chair of Pathology in the Faculty of Medicine of the Egyptian University. In this post he was an immediate success, as the following testimony from a colleague shows. "To an excellent knowledge of his subject Urquhart added the fruits of a wide and varied experience. As a teacher none could have been more patient and painstaking. He inspired his staff with an enthusiasm for teaching and research which will remain for long years as a memorial of his work in Egypt. Gentle, generous, and kindly in nature, he deeply endeared himself to all his colleagues, both English and Egyptian. His students revered him for his knowledge and repaid him with their whole-hearted affection for his devotion to them. Perhaps the most dominant feature of his character was his friendliness and his capacity for making friends. Of these, and their name is legion, each one will confess that a more sweet and lovable character could scarcely be found. His death at the early age of 44 leaves an aching void in the hearts of all who knew him."

Prof. Urquhart was not a prolific writer, but his contributions to medical literature were characterised by a very high degree of painstaking accuracy. Probably his most important articles were a review of the Serological and Morphological Characteristics of the Pneumococcus in the *Journal of the Royal Army Medical Corps* (1922) and a joint study of Bacillary Dysentery in the British Forces in Macedonia published for the Medical Research Committee.

He married in 1915 Anne, daughter of the late Mr. D. F. Addis, formerly of the Indian Civil Service. They had one son, born in 1920. He died in the evening of March 28th, and was buried, with full military honours, on the following afternoon in the British Protestant Cemetery, Old Cairo.

HENRY HARVEY M.B. Edin.

Dr. Harvey, who has died in Liverpool in his eighty-fifth year, was widely esteemed as a practitioner in the city where he had spent most of his life. Born at Milton in Kent, the son of Jacob Harvey, he was educated at Liége in Belgium and at Edinburgh, where he qualified in 1870. He went to Liverpool in the following year as house surgeon at the Liverpool Southern and Toxteth Hospital, and at the time of his death he was the only human link between that institution and the Royal Southern Hospital to which his services were transferred on the reorganisation in 1872. On completing his resident appointment in 1873 he took up general practice in the Wavertree district, becoming medical officer of health for Wavertree, and subsequently for Childwall. As a general practitioner interested in both medicine and general surgery he was well acquainted with the professional life of Liverpool. "It is a pity," writes one of his medical friends, "that he did not write biographical sketches to place in the archives of the Liverpool Medical Institution, for he was a man of literary culture whose style was one of interesting narrative. In course of conversations with him one learnt much about the conditions, more especially of surgical practice, in the days when antiseptic surgery was in its infancy, and when faulty technique accounted for much scepticism concerning Lister's teaching. It was always interesting to meet him, because his knowledge embodied the best of the old methods of therapeusis, so many of which have unfortunately been forgotten or remain untaught, together with the modern methods of treatment in which he was well versed. He was a thoroughly sound practitioner, trusted and respected by all with whom he came in contact. His kindly, thoughtful face and gentleness of manner, together with his keen personal interest in his patients, were, in themselves, assets which promoted their well being. Of him it might truly be said, 'He is gentil that doth gentil dedis.'"

ALEXANDER JAMES, M.D., F.R.C.P., F.R.S. Edin.

EDINBURGH has lost a distinguished physician by the death of Dr. Alexander James, at the age of 81. He belongs to the generation that included Prof. Grainger Stewart, Dr. Claud Muirhead, Prof. Wylie, and Mr. "Joe" Bell. Graduating in 1872, he studied abroad at Leipzig, and returned to become lecturer on the practice of medicine in the extra-mural school at Edinburgh. In due course he was appointed physician to the Royal Infirmary, where he was a popular clinical teacher. A colleague writes of him that he was an engaging personality and secured the devotion of his students. "He had a good speculative mind, and was ready for controversy at a moment's notice; but he made no enemies. He took strong views, but he always retained his genial temper. At the local branch of the British Medical Association and at the Medico-Chirurgical he would bring up problems like the effect of hospitals on the spread scarlet fever, and, on one occasion, he continued .e debate over three weekly meetings." Dr. James lieved that hospitals tended to spread scarlet ver, and he was strongly against the massing of ildren in large public schools. He opposed medical spection of school-children by whole-time medical ficers, preferring that the work should be done by ie family practitioners. As he was physician to he schools of the Edinburgh Merchant Company is views led to a serious official situation. It was ltimately resolved by the company's agreement ith the Scottish Education Department that the ork should be done by the medical officers of the hool board, and this system has been operative r over 20 years. He also had very definite views n tuberculosis, holding a theory that the Timothy rass bacillus was an active factor. He was always eady, at casual meetings, to argue the case. He as also keenly interested and well informed on ociological problems, and his occasional addresses howed that he was alive to the social aspects of nedicine.

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Maj. H. S. Blackmore, Res. of Off., R.A.M.C., relinquishes his appt. under Art. 520 (b), Royal Warrant for Pay and Promotion, 1831.

Maj. R. W. Chapman retires, receiving a gratuity.

TERRITORIAL ARMY.

Capt. H. V. Morlock resigns his commn.

Lts. C. R. L'E. Orme and J. G. Weston to be Capts.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. T. P. Puddicombe, having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

The undermentioned officers relinquish their temp. commns.: Capts. R. C. Goulatia and S. K. Ganguli.

ROYAL AIR FORCE.

Flying Officer Hyman Ruben Clein is promoted to the rank of Flight Lieutenant.

RESERVE OF AIR FORCE OFFICERS.

Flight-Lt. J. J. Quinlan relinquishes his commission on appointment to a commission in the Indian Medical Service.

THE COLONIAL SERVICE.

Dr. E. V. W. Mellard is appointed Surgeon at Jamaica; Dr. C. H. Howat, District Medical Officer at Cyprus; Dr. J. S. Cramer, Supernumerary Medical Officer, Leeward Islands; Dr. H. B. Boucher, Medical Officer, Gambia; Dr. J. W. Murdoch, Medical Superintendent Central Mental Hospital, Federated Malay States; and Dr. A. H. Owen, Director of Medical and Sanitary Services, Tanganyika Territory.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

RESTRICTION OF THE PRACTICE OF MEDICINE BY FOREIGNERS.

THE disquieting influx of foreign medical students and doctors into France, to which I have referred from time to time, has culminated in protective legislation which is likely to put a most effective barrier to future invasions of this kind. A Bill dealing with this problem was passed on Feb. 29th by the Chamber of Deputies without discussion. As it had already been approved by the Senate, there is no prospect of its being set aside. It remains, however, to be seen how far its conditional clauses will react to the circumstances of individual cases. According to the first article, no one may practise medicine in France unless he is a French subject or a native of a French Protectorate. Nor may he practise medicine without a State diploma. But in the case of those countries in which French doctors are allowed to practise, applications may be made to the French Government for dispensation in certain instances from the obligation of becoming a naturalised Frenchman. With regard to such countries, it is presumed that an equilibrium will be established in the sense that approximately as many Frenchmen as foreigners are allowed to practise in each other's countries. The second article concerns the preliminary studies and examinations which may be made obligatory on newcomers even if they already possess the medical diploma of some other country. As for the foreign medical student, the third article rules that no exemption from preliminary studies shall be made, however prolonged his studies abroad may have been. In the fourth article, surgeon-dentists with foreign diplomas are obliged, if they wish to practise in France, to pass the same examinations that are required of French students seeking a diploma in dentistry. Not more than a year of preliminary studies can be dispensed with by the would-be surgeon-dentist. As for the foreign doctors and dentists already practising in France, they must submit their diplomas for verification within three months.

AMALGAMATING EDINBURGH HOSPITALS.—A meeting of the subscribers to the Edinburgh Royal Maternity and Simpson Memorial Hospital recently unanimously agreed to the amalgamation of the institution with the Edinburgh Royal Infirmary. The agreement will require the sanction of Parliament. Last year the Simpson Hospital dealt with over 44 per cent. of the births in Greater Edinburgh, and 3467 cases were attended. The building of a new hospital on the site of George Watson's College will shortly be begun.

DONATIONS AND BEQUESTS.—Mr. Edwin Hoyle, of Old Hall Hotel, Buxton, Derbyshire, bequeathed £1500 to Ancoats Hospital and Ardwick and Ancoats Dispensary, Manchester; £1000 to St. Mary's Hospitals, Manchester; £500 to Henshaw's Institution for the Blind, Manchester; £500 to St. Dunstan's Hostel; £300 to the Devonshire Hospital, Buxton; £200 to the Dental Hospital, Manchester; £200 to Manchester and Salford Blind Aid Society; £100 to the Buxton and District Cottage Hospital; and the residue of the property as to one-fifth to the Royal National Lifeboat Institution, and four-fifths to the Manchester Royal Infirmary and Dispensary.—Mrs. Margaret Brown Cade, Kingston, left by will £1000 to Hull Royal Infirmary, and £500 to Hull and Sculcoates Dispensary.—The late Mr. Edward Brake, of Bath, left, on his wife's death, £1000 to the Royal Bath United Hospital, and £1000 to the Cancer Fund of the Middlesex Hospital, London.

OBITUARY

ALEXANDER L. URQUHART, M.B. Edin.,

PROFESSOR OF PATHOLOGY IN THE EGYPTIAN UNIVERSITY.

The Faculty of Medicine of the Egyptian University has suffered a severe blow in the loss of its professor of pathology, Prof. A. L. Urquhart, whose death we announced last week.

Alexander Lewis Urquhart, son of the late Dr. A. R. Urquhart, of Perth, was born on April 15th, 1887. He was educated at Edinburgh Academy and thence proceeded in 1906 to the University of Edinburgh, where he was at first more marked out by his proficiency at games than at work, being a full exponent of football, cricket, and golf, especially the first. In 1911 he graduated as M.B., and in the same year entered the Royal Army Medical Corps. Between then and the outbreak of war he served for most of the period as demonstrator in the R.A.M.C. College at Millbank, and while thus employed he obtained the D.P.H. diploma of the Conjoint Board. Soon after the commencement of the war he was sent to France in command of a motor ambulance convoy. After a short time in this position he was transferred to the Macedonian front in charge of the main pathological laboratory, and was twice mentioned in despatches. For his services in the war he was awarded the O.B.E.

On his return to England in 1919 he was offered by Prof. L. S. Dudgeon, under whom he had worked in Macedonia, a post in the pathological department of St. Thomas's Hospital, and severing his connexion with the R.A.M.C. he accepted the offer. From then till 1927 he acted as lecturer in pathology at St. Thomas's Hospital, and Curator of the Museum. But in 1927 he was offered and accepted the chair of Pathology in the Faculty of Medicine of the Egyptian University. In this post he was an immediate success, as the following testimony from a colleague shows. "To an excellent knowledge of his subject Urquhart added the fruits of a wide and varied experience. As a teacher none could have been more patient and painstaking. He inspired his staff with an enthusiasm for teaching and research which will remain for long years as a memorial of his work in Egypt. Gentle, generous, and kindly in nature, he deeply endeared himself to all his colleagues, both English and Egyptian. His students revered him for his knowledge and repaid him with their whole-hearted affection for his devotion to them. Perhaps the most dominant feature of his character was his friendliness and his capacity for making friends. Of these, and their name is legion, each one will confess that a more sweet and lovable character could scarcely be found. His death at the early age of 44 leaves an aching void in the hearts of all who knew him."

Prof. Urquhart was not a prolific writer, but his contributions to medical literature were characterised by a very high degree of painstaking accuracy. Probably his most important articles were a review of the Serological and Morphological Characteristics of the Pneumococcus in the *Journal of the Royal Army Medical Corps* (1922) and a joint study of Bacillary Dysentery in the British Forces in Macedonia published for the Medical Research Committee.

He married in 1915 Anne, daughter of the late Mr. D. F. Addis, formerly of the Indian Civil Service. They had one son, born in 1920. He died in the evening of March 28th, and was buried, with full military honours, on the following afternoon in the British Protestant Cemetery, Old Cairo.

HENRY HARVEY M.B. Edin.

Dr. Harvey, who has died in Liverpool in his eighty-fifth year, was widely esteemed as a practitioner in the city where he had spent most of his life. Born at Milton in Kent, the son of Jacob Harvey, he was educated at Liége in Belgium and at Edinburgh, where he qualified in 1870. He went to Liverpool in the following year as house surgeon at the Liverpool Southern and Toxteth Hospital, and at the time of his death he was the only human link between that institution and the Royal Southern Hospital to which his services were transferred on the reorganisation in 1872. On completing his resident *appointment in 1873 he took up general* practice in the Wavertree district, becoming medical officer of health for Wavertree, and subsequently for Childwall. As a general practitioner interested in both medicine and general surgery he was well acquainted with the professional life of Liverpool. "It is a pity," writes one of his medical friends, "that he did not write biographical sketches to place in the archives of the Liverpool Medical Institution, for he was a man of literary culture whose style was one of interesting narrative. In course of conversations with him one learnt much about the conditions, more especially of surgical practice, in the days when antiseptic surgery was in its infancy, and when faulty technique accounted for much scepticism concerning Lister's teaching. It was always interesting to meet him, because his knowledge embodied the best of the old methods of therapeusis, so many of which have unfortunately been forgotten or remain untaught, together with the modern methods of treatment in which he was well versed. He was a thoroughly sound practitioner, trusted and respected by all with whom he came in contact. His kindly, thoughtful face and gentleness of manner, together with his keen personal interest in his patients, were, in themselves, assets which promoted their well-being. Of him it might truly be said, 'He is gentil that doth gentil dedis.'"

ALEXANDER JAMES, M.D., F.R.C.P., F.R.S. Edin.

Edinburgh has lost a distinguished physician by the death of Dr. Alexander James, at the age of 81. He belongs to the generation that included Prof. Grainger Stewart, Dr. Claud Muirhead, Prof. Wylie, and Mr. "Joe" Bell. Graduating in 1872, he studied abroad at Leipzig, and returned to become lecturer on the practice of medicine in the extra-mural school at Edinburgh. In due course he was appointed physician to the Royal Infirmary, where he was a popular clinical teacher. A colleague writes of him that he was an engaging personality and secured the devotion of his students. "He had a good speculative mind, and was ready for controversy at a moment's notice; but he made no enemies. He took strong views, but he always retained his genial temper. At the local branch of the British Medical Association and at the Medico-Chirurgical he would bring up problems like the effect of hospitals on the spread had been told of numbers of cases where there was tinct evidence of deterioration in the children's alth. He was sure that this was not the wish of the nister of Labour, but it was certainly happening. had had complaints from private organisations ich had had certain funds that they were having spend those funds for such things as additional lk. This was a very serious thing. Further an that the action of some of the public assistance mmittees was such as to lead the men in the district believe that if they got the maximum transitional nefit in no circumstances would they get poor-law lief as well. The maximum was 33*s.* 3*d.* for a man d wife and five children, and they could not live that sum. (Hear, hear.) This condition of things ould result in a dreadful deterioration in the health d physique and morale of the country and in the d the State would have to pay for that.

After further debate the resolution was agreed to

PUBLIC HEALTH SERVICES.

On Tuesday, April 12th, on the motion that the ouse of Commons should go into Committee of pply on the Civil Service Estimates, Dr. MORRIS-ONES called attention to local government administra-on and moved "that this House appreciates the ogress made by local authorities since the passing the Local Government Act of 1929 in coördinating d improving their public health services and, while cognising the need for economy in local expenditure, of opinion that the development of these services hould steadily continue as and when circumstances ermit.". After debate,

Sir E. HILTON YOUNG (Minister of Health) said hat there was no foundation for the suggestion that here had been any unwise restriction of the public ealth services in the interests of economy. It was he policy of the Government, as it would be of any overnment, to consider public health as a matter of rgent national importance, and they held that conomy would be false if it resulted in reducing the fficiency of those essential services.

The motion was withdrawn.

HOUSE OF COMMONS.

TUESDAY, APRIL 5TH.

Slum Clearance.

Mr. ALBERY asked the Minister of Health if he could make a statement on the progress of slum clearance and the future intentions of the Government.—Mr. ERNEST BROWN (Parliamentary Secretary to the Ministry of Health) replied: Up to the 31st March last my right hon. friend had received resolutions declaring 408 areas in England and Wales, the clearance of which involves the displacement and re-housing of approximately 68,000 persons, to be clearance areas under the Housing Act, 1930, and 269 clearance or compulsory purchase orders had been submitted in connexion with such areas. Upwards of 13,000 houses, which are either earmarked or available for the purposes of the Act, have either been erected or are under construction. The intention is that local authorities should continue to make the fullest possible use of their powers in this matter.

WEDNESDAY, APRIL 6TH.

Hospitals and Motor Accidents.

Sir JOHN HASLAM asked the Minister of Transport if he had any information to give to the House as to the cost to the hospitals of the country during 1931 of treating motor accident cases; and what proportion of such cost had been recovered by them under the Road Traffic Act.—Mr. PYBUS replied: I regret that I am not in possession of the information asked for.

Sir J. HASLAM: Will the Minister make inquiries, because those of us who are interested in hospitals know that the receipts are infinitesimal as compared with the cost to the hospitals, and we fully expected a different state of affairs when the Bill was passed last session.

Mr. PYBUS: I am entirely sympathetic with the hon. gentleman, but as he will appreciate the information is very difficult to procure. However, I will try again.

Sir J. NALL: Could not my right hon. friend ask the police authorities to send the accident cases to the poor-law hospitals, which are in a position to make charges, rather than impose them on the voluntary hospitals.

Maternal Mortality.

Mr. RHYS DAVIES asked the Minister of Health whether the departmental committee on maternal mortality had finished their deliberations; and when would their final report be published.—Mr. ERNEST BROWN replied: My right hon. friend understands that this committee are now considering their final report, which is expected to be ready for publication towards the end of the summer.

Imports of Bacon from Lithuania.

Mr. PRICE asked the Minister of Health where the imports of bacon from Lithuania and Poland were examined; whether the bacon was imported chemically cured or smoked; and what quantity was rejected as unfit for *human food in the 12 months ended* Dec. 31st, 1931.—Mr. ERNEST BROWN replied: Bacon is consigned from Lithuania and Poland to Bermondsey and Hull. It may be examined there and at other ports to which it is tran-shipped, such as Liverpool and Newcastle. It is brine-cured, in accordance with the regulations of the Ministry of Agriculture and Fisheries. My right hon. friend regrets that he cannot state separately the total quantity of bacon from these particular countries which has been condemned.

Antenatal Clinics in London.

Mr. RHYS DAVIES asked the Minister of Health the number of antenatal clinics which had been approved by the Ministry up to date in London, the county boroughs, and the counties, giving the number of municipal and voluntary centres, the number of separate sessions in each division, and the number of sessions held on the same day as the infant consultations were held.—Sir E. HILTON YOUNG replied: The approval of my department is not now required to the establishment of antenatal clinics. The *returns for the year 1930, the latest* year for *which complete* information is at present available, show that at the end of that year the number of antenatal clinics maintained by local authorities and by voluntary associations in London, and in the county boroughs and counties in England and Wales, and the number of sessions held during the year, were as follow:—

—	Number of antenatal clinics maintained by—		Number of sessions at all antenatal clinics during 1930.
	Local authorities.	Voluntary associations.	
England—			
London	52	66	8,165
County boroughs	242	58	19,599
Counties	560	70	17,668
Totals ..	854	194	45,432
Wales—			
County boroughs	9 } 53	—	804 } 1,543
Counties	44 }		739 }
Grand totals ..	907	194	46,975

Information is not available as to the number of sessions held at the municipal and voluntary clinics, respectively, in England, or as to the number of sessions held on the same day as the infant consultations are held.

Food Consumption in Britain.

Mr. THOMAS WILLIAMS asked the Minister of Agriculture approximately the proportion of food for human consumption produced in this country and imported from abroad during 1931.—Sir J. GILMOUR replied: The latest available figures are those contained in the report on the Agricultural Output and Food Supplies of Great Britain, published by the Ministry of Agriculture and Fisheries in 1929. These estimates were based chiefly on the years 1924–27, and showed that in the case of foodstuffs (including fish) normally produced in Great Britain the value of the *home production* was 44·9 per cent. of the total. The comparable figure for all foodstuffs was 39·3 per cent. Similar calculations will, it is hoped, be made in connexion with the agricultural and industrial censuses for 1930, but the results cannot be available for some considerable time.

THURSDAY, APRIL 7TH.

Disability Pensions.

Major LEIGHTON asked the Minister of Labour the number of men drawing disability pension registered as unemployed at the labour exchanges.—Sir H. BETTERTON replied: At Feb. 22nd, 1932, the latest date for which figures are

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

UNEMPLOYMENT BENEFIT AND PUBLIC HEALTH.

THE House of Commons, which reassembled after the Easter Recess on Tuesday, April 5th, went the same day into Committee on the financial resolution in connexion with the Transitional Payments (Unemployed Persons) Bill. Captain BOURNE, Deputy-Chairman of Committees, was in the chair.

Sir HENRY BETTERTON (Minister of Labour) in moving the resolution, said its objects were twofold. The first was that the power to make transitional payments to persons who had not paid 30 contributions in the past two years should be extended to June 30th, 1933; and the second was that the cost of this extension should be met by the Exchequer. Those persons who were now in receipt of transitional payments would cease to receive them so soon as their benefit period expired; and supposing that there were no new legislation they would begin to run off immediately after April 18th next. If, therefore, the power to make transitional payments beyond that date was to continue this Bill must be passed in the interim. The reason why the Bill provided that the period should be extended to June 30th, 1933, was that in June of next year the Act—or any how the material parts of it—which was passed by the Labour Government expired, and the anomalies Act passed by the Labour Government also expired on the same date. Therefore, before that time there must be new legislation dealing with the whole question. The Royal Commission set up by the Labour Government were considering what arrangements were to be made outside the insurance scheme for the able-bodied unemployed, and that must include the whole position of those now affected by transitional payments. The Bill connected with this financial resolution was therefore a temporary carrying-over measure pending legislation which would in any case be necessary next year. The cost to the Exchequer up to June 30th, 1933, was estimated to be about £20,000,000. There had been a reduction in the numbers of the unemployed of 134,000 compared with a month ago. This was the first time for over two years in which the figures had been less than they were a year before and they had to go back to December, 1929, to find a figure which was less than the corresponding period of a year ago. He thought that these figures justified the hope that when world conditions improved and economic chaos was replaced by ordered progress, this country would be among the first nations of the world to take advantage of that improvement.

OPERATION OF THE MEANS TEST.

Mr. LAWSON said that not only were the Government pushing this financial responsibility back upon the poor-law, but they were pushing it back upon the poorest families. The operation of the means test was inflicting upon great masses of the people the most disgraceful pains and penalties, amounting almost to poverty of the worst kind. He had seen a letter in the newspapers that had been received by one of the Members of the House from one of the chief doctors in one of the great hospitals of Newcastle in which there was a request that the Member should use his influence to put an end to the means test because in his own experience the doctor had had daily proof of the fact that the means test was playing havoc with the physique and the general life of the people with whom he came in contact. He (Mr. Lawson) had always been willing to give credit for the great kindness of people generally, but nevertheless he said deliberately that whether they meant it or not a great section of the well-to-do in this country had been callous concerning the application of the means test to the great masses of the people. That was the more significant when one noted that for every pound asked for on the money market it was possible to get £50 from those desirous of subscribing. After all the real problem facing the present or any other Government was to get rid of unemployment. The Government might succeed in passing this Bill, but as far as the Labour party was concerned they were in favour of ending the means test root and branch without equivocation or qualification. *It was also time that the Government* should realise clearly that if men could not get work it was their duty to maintain them in an adequate and decent way.

Mr. MACMILLAN said that the maintenance of the unemployed had to be carried through on economical lines now and in the future, not because any Member of the House thought that 15*s.* 3*d.* per week was a sufficient sum for a man to live upon, but because too great a strain upon public expenditure might make it impossible to pay such people any sum at all. Nevertheless it was true, whoever might be responsible for the present difficulties, that a Government which asked people to be patient under hardships must satisfy them that every step was being taken to deal with the conditions and circumstances which had made those hardships necessary. He thought that the National Government had made a good start.

THE POVERTY LINE OF SUBSISTENCE.

Mr. A. BEVAN said that they ought not to keep hundreds of thousands of people on the poverty line of subsistence. Some time ago a medical investigation was conducted in the county of Monmouth and all the children in 10 schools were examined for malnutrition. They were examined as regarded weight, for height, anæmia, poor toneless skin, lack of subcutaneous tissue, dry hair, lacking lustre, tired expression, and listless attitude. The children were compared, not with children belonging to the higher classes, but with children in the rural areas of the county. There was no difference of race. The graph for each age-group of children showed a downward curve in the schools situated in the areas where unemployment had been continuous as compared with the graph of children in the rural areas. In the age-group 11–12 years the children were on the average 4 lb. lighter in weight; in the age-group 12–13 nearly 6 lb. lighter in weight: in the age-group 13–14—children who were born when the industrial depression started—the difference in weight was 7¾ lb. In every case the weight of the child was infinitely lower than the average weight for the whole country. In the matter of height the same story was told. The medical officers' report was open for public inspection and the facts spoke for themselves. The difference in height was, in some cases, half an inch, three quarters of an inch, five inches, three inches, and four inches. Yet the Ministry of Health and the Ministry of Labour said that these children were too fat and that they must sacrifice another few pounds in weight in order to keep the National Government in office.

DETERIORATION IN CHILDREN'S HEALTH.

Mr. BRIANT asked the Minister whether, considering that the present position had to continue for another 15 months, it was not possible to issue some regulations which, while not affecting the general administration of the unemployment fund, would assist its smoother operation. He believed that the means test was justified but in practice it was often found to be carried out extremely unfairly. The Charity Organisation Society was considered by some people to be rather hard, but his information from many of its most experienced members was that there was beginning to be a distinct reduction in the balance which was available for even the ordinary care of children.

ore being landed here so as to prevent their being a possible se of typhoid if used for human consumption.—Mr. E. own replied: No special regulations have been made by department with regard to imported shell-fish, but the h Free State Government have made regulations hibiting the distribution for sale for human consumption shell-fish taken from layings in a defined area in the nties of Louth and Meath, unless the shell-fish have been shed and relaid. My right hon. friend is not aware that similar regulations have been made applying to other ings in the Irish Free State.

Lotteries and Sweepstakes.

Sir William Davison asked the Prime Minister whether would be provided in the terms of reference to the Royal mmission which the Government purposed to set up inquire into the law relating to lotteries, &c., that it was sirable that a report on the matter should be presented thin a period not exceeding four months so that the isting anomalies of the law relating to lotteries might be nedied without delay; and whether the Government d definitely decided that, pending the Report of the yal Commission, no facilities were to be given for the ther stages of the Lotteries Bill, ordered by the House Commons to be brought in on March 22nd.—Mr. acDonald replied: The terms of reference of the Royal ommission are under consideration. It would be practicable to suggest any time limit within which the ommission are to report, but I have no doubt that they will deavour to expedite their inquiry so far as the complexity the issues involved will permit. It would be within the scretion of the Commission to submit interim reports ould they consider it expedient to do so. Pending the ceipt of their report it would be inappropriate, I think, r legislation to proceed on one aspect of the problem which ey are to investigate.

Unemployed Persons and Poor Relief.

Mr. Rhys Davies asked the Minister of Health the oportion of persons receiving unemployment benefit and ansitional benefit payments, respectively, who were also receipt of poor relief.—Sir E. Hilton Young replied: t the beginning of February, 1932, approximately 1 per ent. of the persons with claims authorised for insurance enefit, and 1·9 per cent. of those with applications authorised r transitional payments, were in receipt of poor relief. hese particulars relate to England and Wales only.

Mr. Rhys Davies asked the Minister of Health the total umber of men and women, and their dependants, espectively, receiving poor relief due to unemployment.—ir E. Hilton Young replied: During the month of ebruary, 1932, the average numbers of unemployed men nd women (and their dependants) ordinarily engaged in ome regular occupation who were in receipt of poor relief n England and Wales were: men, 83,398; women, 5145; ependant wives and children, 205,499.

Mr. Hornby asked the Minister of Labour if he was aware hat owing to the action of courts of referees in disqualifying persons in the transitional class from insurance benefit many persons had had to seek public assistance, and that this number was increasing, causing a burden on the rates of many cities and towns; and whether he was prepared to promote legislation making poverty arising from unemployment a national charge.—Sir Henry Betterton replied: No, Sir. I have no evidence that what my hon. friend suggests is taking place. The courts of referees have to decide, in cases of doubt and subject to appeal to the umpire, whether an applicant is normally in an insured trade; this condition has remained unchanged since transitional benefit was first instituted in 1928.

TUESDAY, APRIL 12TH.

Imports of Manchurian Partridges.

Mr. J. P. L. Thomas asked the Minister of Health whether he was aware that Manchurian partridges were being imported at the present time into Great Britain; and whether he was satisfied that the conditions under which these birds were trapped and transported were such that their sale in this country complied with the provisions governing the purity of food-supplies.—Mr. E. Brown replied: My right hon. friend understands that very few of these birds have been imported recently into this country. He has no definite information as to the conditions under which they are trapped and transported, but they are subject to inspection at the ports in this country under the Public Health (Imported Food) Regulations.

Cottage Hospital Costs.—Last year the Lyme Regis and District Cottage Hospital admitted 188 in-patients who cost on the average £3 15s 1½d. per week, a reduction of 5s. 6d. on the preceding years.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 2ND, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 95 (last week 41); scarlet fever, 1435; diphtheria, 815; enteric fever, 19; acute pneumonia (primary or influenzal), 1662; puerperal fever, 49; puerperal pyrexia, 104; cerebro-spinal fever, 69; acute poliomyelitis, 5; acute polio-encephalitis, 1; encephalitis lethargica, 16; dysentery, 15; ophthalmia neonatorum, 96. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 5th–6th was as follows: Small-pox, 121 under treatment, 4 under observation (last week 115 and 10 respectively); scarlet fever, 1390; diphtheria, 1432; enteric fever, 12; measles, 2757; whooping-cough, 435; puerperal fever, 30 (plus 13 babies); encephalitis lethargica, 226; poliomyelitis, 4; "other diseases," 131. At St. Margaret's Hospital there were 8 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was 1 death from small-pox, 2 (1) from enteric fever, 114 (65) from measles, 4 (2) from scarlet fever, 46 (7) from whooping-cough, 30 (5) from diphtheria, 51 (9) from diarrhœa and enteritis under two years, and 158 (27) from influenza. The figures in parentheses are those for London itself.

Worcester reports the only death from enteric fever outside London. The fatal case provisionally classified to small-pox occurred in Deptford Metropolitan Borough. Deaths from influenza are sharply declining, the largest total being reported from Bristol with 13, followed by Sheffield with 7. Ten of the fatal cases of measles were reported in Liverpool, 5 each in West Ham and Portsmouth. There were 4 deaths from whooping-cough in West Ham and in Liverpool. Diphtheria accounted for 5 deaths in Liverpool, 4 in Hull.

The number of stillbirths notified during the week was 313 (corresponding to a rate of 47 per 1000 births), including 51 in London.

Fatal Case of Small-pox.—This case which occurred in Deptford was, Dr. F. L. Keith tells us, that of an unvaccinated infant, 3 weeks old at death. The child was infected during the first three days after birth, contracting the disease from her sister who had been in contact with other cases at school. The cause of death was given in the certificate as (*a*) pyæmia, (*b*) small-pox.

Walsall Contributory Scheme.—Under the terms of the contributory scheme which it is proposed to establish for Walsall General Hospital the following are eligible for membership: (1) married persons whose income does not exceed £312 per annum; (2) unmarried persons, widows, and widowers whose income does not exceed £250; (3) unmarried persons, widows, and widowers, whose income does not exceed £312, but who have relatives dependent on them; (4) young persons between the age of 14 and 16. Dependents of Classes 1 and 3 are also eligible for treatment. The contributions in Classes 1 and 3 are 3*d.* per week: Class 2, 2*d.* per week; Class 4, 1*d.* per week. Employers are invited to add a subscription of not less than one-third of their employees' contributions. The hospital's present income is £15,000, it spends £18,000, and needs £20,000.

Orthopædic Hospitals.—At the Manfield Orthopædic Hospital, Northampton, the average stay of a patient last year was 232 days at a cost of £83 13*s.* 8*d.* Dr. J. M. Mackintosh, the county medical officer, states that 70 per cent. of the patients become wage earners, and that "the quality of the treatment and the nursing are unsurpassed in this country."—The Wingfield Orthopædic Hospital at Headington, Oxford, which serves Berkshire, Buckinghamshire, and Oxfordshire, has been renamed the "Wingfield-Morris" Hospital in recognition of the generosity of Sir William Morris in undertaking to defray the entire cost (£70,000) of the new building. The old hospital consisted of temporary wooden buildings. The reconstruction scheme includes 140 beds, nurses' quarters with 50 rooms, a trainees' hostel for 22, and complete new workshops.

available, there were 43,674 ex-Service men in receipt of disability pensions on the registers of employment exchanges in Great Britain.

Economies and the Means Test.

Mr. LOGAN asked the Minister of Labour the total amount of savings effected as a result of the working of the Anomalies Act up to the latest available date.

Mr. THOMAS WILLIAMS asked the Minister of Labour how many applications for transitional benefit had been dealt with by public assistance committees; and what was the estimated saving effected by the imposition of the means test in this connexion.—Sir H. BETTERTON replied: The weekly benefit paid to persons on the live register at the end of February, after allowing for the reduction in the rates of benefit, was about £185,000 less than would have been paid in respect of the same number of persons on the live register before the introduction of the Anomalies Regulations and the Needs Test. This saving is at the rate of about £9,500,000 a year, of which roughly £2,000,000 may be attributed to the Anomalies Regulations and £7,500,000 to the Needs Test. There was, in addition, a saving in respect of persons who, on ceasing to draw benefit or transitional payments, discontinued registration without finding employment; while it is difficult to estimate this further saving precisely, I am satisfied that the total saving is at least as much as that estimated in the White Paper (Cmd. 3952) issued in connexion with the Economy Bill. As regards the first part of the question by the hon. Member for Don Valley, between Nov. 12th, 1931, and Feb. 20th, 1932, 3,212,862 applications for transitional payments were submitted to public assistance committees in Great Britain for determination. This number included 1,421,484 initial applications, and 1,791,378 renewal applications.

Free Meals for School-children.

Mr. THORNE asked the President of the Board of Education if he had any information as to the number of children receiving free meals from the various local educational authorities throughout the country for the period Nov. 1st to the nearest available date.—Sir DONALD MACLEAN replied: During the week ended Nov. 7th last approximately 113,000 children received free meals, including milk meals, under arrangements made by local education authorities in England and Wales. For the week ended March 12th last, the latest date for which complete figures are available, the corresponding figure was 139,000.

Poor-law Relief.

Mr. LUNN asked the Minister of Health what was the total number of men and women on poor-law relief at the end of July, 1931; and what was the total at the end of March, 1932, or up to the latest date available.—Sir E. HILTON YOUNG replied: Exact figures cannot be given, but it is estimated that approximately 284,000 men and 366,000 women were in receipt of relief at the end of July, 1931, and approximately 348,000 men and 448,000 women at the end of March, 1932.

Mr. THORNE asked the Minister of Health the number of persons in receipt of poor-law relief from Oct. 1st, 1931, to March 31st, 1932.—Sir E. HILTON YOUNG replied: The returns made to my department show the number of persons in receipt of poor relief on particular days, and not the number of persons who received poor relief during a period. The following is a statement as to the number of persons in receipt of poor relief in England and Wales on the last Saturday in each month from September, 1931, to March, 1932:—

September, 1931 ..	1,005,813	January, 1932 ..	1,188,628
October, ,, ..	1,050,342	February, ,, ..	1,219,701
November, ,, ..	1,089,023	March, ,, ..	1,220,000*
December, ,, ..	1,127,006		

* Approximate.

These figures do not include rate-aided patients in mental hospitals.

Local Government.

Lieut.-Colonel ACLAND-TROYTE asked the Minister of Health whether it was proposed to introduce legislation during the present session to give effect to the final report of the Royal Commission on Local Government.—Sir E. HILTON YOUNG replied: The final report of the Royal Commission contains recommendations on a large variety of subjects. Measures have already been taken to deal with some of them. I cannot undertake to propose further legislation this session on the recommendations.

Feeble-minded Persons in Britain.

Mr. LAMBERT asked the Minister of Health the estimated number of feeble-minded persons in Great Britain; and what proportion was cared for in public institutions.—Sir E. HILTON YOUNG replied: The number of mentally defective persons, including children, was estimated by the Wood Committee to be, approximately, 300,000. On Jan. 1st, 1932, the total number of mental actually ascertained by local authorities was 97,310, whom 33,356 were in institutions or under guardianship. These figures relate only to England and Wales.

Royal Commission on Sweepstakes and Lotteries

Mr. BERNAYS asked the Home Secretary whether he intended to institute an inquiry into the law relating to sweepstakes in this country.—Sir H. SAMUEL replied: It is generally agreed that there are serious difficulties in the way of enforcing the present law in regard to sweepstakes and lotteries. Events during the last two years have brought the matter very prominently to the attention both of the Government and the public. Questions have also arisen with regard to the use of totalisators both generally and in connexion with greyhound racing tracks. There are difficulties in connexion with the enforcement of the relating to street betting, and from time to time new developments arise such as the attempt to introduce betting at motor-cycle speedway races. In view of the complexity of the issues involved, and the diversity of the views entertained in regard to these questions, the Government have decided that, before considering whether any amendment of the present laws is necessary, it is essential that a comprehensive inquiry should be undertaken by a Royal Commission. Steps will accordingly be taken for the appointment of a Royal Commission, with wide terms of reference, as soon as the necessary arrangements can be made.

MONDAY, APRIL 11TH.

Child Marriage in India.

Mr. MCENTEE asked the Secretary of State for India the number of prosecutions taken out under the Sarda Child Marriage Restraint Act since its enforcement; and whether legislation was being placed before the Indian legislature providing for a limitation of the scope of the provisions of the Act.—Sir S. HOARE replied: I have no information regarding the number of prosecutions instituted under the Child Marriage Restraint Act. The Government have placed no legislation before the Indian Legislative Assembly with the object of limiting the scope of the Act, but a number of such Bills have been introduced by private Members.

Indian Medical Qualifications.

Lieut.-Colonel FREMANTLE asked the Secretary of State for India whether he had approved the Bill introduced into the legislative assembly for the establishment of a medical council in India and for the maintenance of a British-Indian medical register; whether he was assured that a standard of qualification would be made and maintained which would enable such qualification to be recognised by the General Medical Council of the United Kindom; and whether medical practice both in India and in the United Kingdom and other parts of the British Empire would be freely open to medical practitioners registered by either medical council.—Sir S. HOARE replied: The answer to the first part of the question is in the affirmative. There is, I think, good reason to hope that the standard of the Indian medical qualifications recognised by the Indian Medical Council will be such as will enable them to be recognised also by the General Medical Council here. As regards the last part the present Bill does not deal directly with the right to practise in India.

Lieut.-Colonel FREMANTLE asked if the right hon. gentleman had any assurance from the General Medical Council here that they would approve the standard set up by this Bill, in which case it would settle the question?

Sir S. HOARE replied that he had had no such assurance.

Lieut.-Colonel FREMANTLE: Is it possible to get some such assurance before this Bill is passed; otherwise Indian medical men qualified in India will be debarred from practising in different parts of the Empire?

Sir S. HOARE: I could not give an answer to that question without further consideration.

Lieut.-Colonel FREMANTLE: The right hon. gentleman says he has approved the Bill. Did he consider it before he gave his approval, or is it only a temporary, provisional approval?

[No reply was given to this question.]

Danger of Polluted Shell-fish.

Sir A. MICHAEL SAMUEL asked the Minister of Health what steps were taken by authorities other than the Fishmongers' Company to safeguard consumers against the dangers of imported polluted shell-fish other than oysters.—Mr. E. BROWN (Parliamentary Secretary to the Ministry of Health) replied: Sanitary authorities have general powers for the inspection and seizure of unwholesome food, and these are put into operation from time to time to prevent the sale of shell-fish which appear to be polluted.

Sir A. MICHAEL SAMUEL asked the Minister of Health what steps were taken to require that shell-fish imported from the Irish Free State should be cleansed and sterilised

Medical Diary

Information to be included in this column should reach us proper form on Tuesday, and cannot appear if it reaches later than the first post on Wednesday morning.

SOCIETIES.

YAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, April 19th.—5 P.M., Special Meeting of Fellows. To consider the proposed change in By-law 1, 7b. 5.30 P.M., General Meeting of Fellows. 8 P.M., Epidemiology and State Medicine. Disease in Children. Special discussion on Infection in the Dormitory. Openers: Dr. J. A. Glover and Dr. R. E. Smith, Epidemiology; Surgeon-Capt. S. F. Dudley and Dr. W. H. Bradley, Disease in Children. Other speakers will take part. Members of the Section of Medicine are specially invited to attend.

Thursday.—7.45 P.M., Neurology. A clinical meeting t the National Hospital, Queen-square, W.C. 8.30 P.M., Urology. Paper: Dr. Hugh Cabot (Mayo Clinic, Rochester, U.S.A.): Nephrostomy in Theory and Practice. Illustrated by diagrams and lantern slides.

Friday.—8 P.M., Epidemiology and State Medicine. Dr. A. S. M. Macgregor: Puerperal Fever and Pyrexia.

HELSEA CLINICAL SOCIETY.

Tuesday, April 19th.—8.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.), Wing-Commander H. A. Treadgold, R.A.F., will open a discussion on Physical Fitness and Aviation. The Meeting will be preceded by Dinner at 7.15 P.M. for 7.30 P.M.

OYAL MICROSCOPICAL SOCIETY.

Wednesday, April 20th.—5 P.M. (at B.M.A. House, Tavistock-square, W.C.), Discussion on the Microscopy of the Filtrable Viruses.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, April 18th, to Saturday, April 23rd.—Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C. Clinical Course in Diseases of the Ear, Nose, and Throat, occupying the whole of each day. Special (limited) classes in Operative Surgery, Pathology, Peroral Endoscopy.—London Lock Hospital, 91, Dean-street, W. Afternoon course in Venereal Disease. (The above courses are open only to Members.) Further particulars from the Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.6.

Monday, April 18th.—10 A.M. to 1 P.M., Gynæcological Ward, Surgical Wards. Genito-Urinary Operations, Skin Department. 2 to 4 P.M., Operations, Surgical Wards. Medical, Surgical, Gynæcological, and Eye Out-patients. 4.15 P.M. (Lecture), Mr. Sinclair: Acute Appendicitis.

Tuesday.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Department. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Dr. Owen: Infant Feeding.

Wednesday.—10 A.M. to 1 P.M., Medical Wards, Children's Medical Out-patients. 2 to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

Thursday.—10 A.M. to 1 P.M., Neurological Out-patients, Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Genito-Urinary and Eye Out-patients. 4.15 P.M. (Lecture): Mr. Roche: The Investigation of a Urinary Case.

Friday.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 12 noon, Medical Lecture. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Dr. Owen: Infant Feeding.

Saturday.—9 A.M. to 1 P.M., Throat Operations, Medical and Surgical Wards, Surgical and Children's Medical Out-patients. The lectures at 4.15 P.M. on Mondays, Tuesdays, Thursdays, and Fridays are open to all medical practitioners without fee.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

Monday, April 18th.—8 P.M., Prof. J. C. Drummond: Recent Researches on the Nature and Function of Vitamins. (First of three lectures.)

ROYAL INSTITUTION, Albemarle-street, W.

Friday, April 22nd.—9 P.M., Prof. J. B. S. Haldane: Hereditary Transmission of Acquired Characters.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

Wednesday, April 20th.—4.30 P.M., Mr. H. P Winsbury White: Diagnosis and Treatment of Surgical Diseases of Urinary Tract in Children.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.

Wednesday, April 20th.—3 P.M., Mr. R. O. Ward: Diagnosis and Treatment of Vesical Papillomata.

ST. MARK'S HOSPITAL, City-road, E.C.

Thursday, April 21st.—4.30 P.M., Mr. J. P. Lockhart-Mummery: Treatment and Prognosis; Cancer of the Rectum.

MANCHESTER ROYAL INFIRMARY.

Tuesday, April 19th.—4.15 P.M., Mr. A. H. Burgess: Back Pressure in Surgery.

Friday.—4.15 P.M., Dr. D. E. Core: Demonstration of Medical Cases.

SALFORD ROYAL HOSPITAL.

Thursday, April 21st.—Mr. L. D. Mercer: Demonstration of Aural Cases.

WESTERN INFIRMARY, Glasgow.

Wednesday, April 20th.—4.15 P.M., Dr. John Gracie: Medical Cases.

UNIVERSITY OF BIRMINGHAM.

Wednesday, April 20th.—4 P.M., Mr. C. J. Bond: Some Aspects of Human Biology. (First of five William Withering memorial lectures.)

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Jun. H.S. At rate of £120.

Barrow-in-Furness, North Lonsdale Hospital.—H.S. £175.

Barry [illegible] 200.

Beckenh[illegible] *Orchard, Eden Park.* Res[illegible]

Birmingham, Dudley-road Hospital.—Jun. Asst. Res. M.O.'s. At rate of £200.

Blackburn Royal Infirmary.—Res. H.P. £175.

Brighton. Royal Sussex County Hospital.—H.P. £150.

Burton-on-Trent, General Infirmary.—Cas. O. and H.P. £150.

Canterbury, Kent and Canterbury Hospital.—H.P. At rate of £125.

Charing Cross Hospital, W.C.—Res. Cas. O. £200.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—H.P. At rate of £100.

Cobham, Surrey, Schiff Home for Recovery.—Res. Surgeon. At rate of £200.

Colchester, Essex County Hospital.—Asst. H.S. £120.

Derby, Derbyshire Hospital for Sick Children.—Res. H.S. At rate of £130.

Durham County Hospital.—Two H.S.'s. Each £150.

Ealing Borough.—Asst. M.O.H. £600.

Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.—Pathologist. £300.

Evelina Hospital for Sick Children, Southwark, S.E.—Hon. Phys. to Out-patients.

Folkestone Borough.—Asst. M.O.H. £600.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. £100.

Hastings, Royal East Sussex Hospital.—Sen. H.S. At rate of £150.

Hospital for Sick Children, Great Ormond-street, W.C.—Secretary. £750.

Hull Royal Infirmary.—H.P. for Sutton Branch Hospital. At rate of £160.

Ilford, King George Hospital.—Two H.S.'s. Each at rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Isleworth, West Middlesex County Hospital.—Ophthalmic Surgeon. 3 gns, per session.

Leeds Hospital for Women.—H.S. At rate of £100.

Leeds Maternity Hospital, Hyde-terrace.—Sen. H.S. and Jun. H.S. At rate of £52 and £26 respectively.

London Light and Electrical Clinic, Ranelagh-road, S.W.—Hon. Manipulative and Electrical Clinic.

London University.—University Chair of Physiology. £1100.

Manchester, Royal Children's Hospital, Pendlebury.—Res. M.O. At rate of £125.

Minehead, Somerset, Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.

National Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. Phys.

Newcastle-upon-Tyne Hospital for Sick Children.—H.P., Sen. H.S., and Jun. H.S. Each at rate of £100.

Newcastle-on-Tyne, Royal Victoria Infirmary.—Jun. Surg. Reg. £150.

Northampton General Hospital.—H.S. to Ear, Nose and Throat Department. At rate of £150.

Portsmouth. Royal Hospital.—Cas. O. At rate of £100.

Preston and County of Lancaster Royal Infirmary.—Cas. O. At rate of £150.

Queen's Hospital for Children, Hackney-road, E.—Clin. Asst. for Med. Out-patients. 5s. each attendance.

Radcliffe-on-Trent, Notts, County Mental Hospital.—Second Asst. M.O. £450.

[illegible].—H.P., Cas. O., and Res. M.O.

[illegible] *stitution.*—Fourth M.O. £400.

[illegible] *ay, N.*—H.P. At rate of £70.

[illegible] *.E.*—Cas. O. At rate of £100.

[illegible], *Rotherhithe, S.E.*—Res. H.P. At rate of £80.

St. Thomas's Hospital, London, S.E.—Chief Asst. to Ophth. Dept.

South London Hospital for Women, Clapham Common, S.W.—H.S. At rate of £100.

University College, Gower-street, W.C.—Bayliss-Starling Memorial Scholarship. £120.

Walsall General Hospital.—Res. Surg. O. At rate of £300.

Wealdstone Parish,—District M.O. £100 Also Public Vaccinator.

Wrexham and East Denbighshire War Memorial Hospital.—Res. H.S. At rate of £150.

York, North Riding Mental Hospital.—Temporary M.O. 7 gns. per week.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at St. Just (Cornwall); Easingwold (Yorks, North Riding); Hornsea (Yorks, East Riding); Sutton-in-Ashfield (Notts); and Haslemere (Surrey).

MEDICAL NEWS

University of Oxford.

The George Herbert Hunt travelling scholarship for 1932 has been awarded to John Charles Leedham-Green, B.M.

Next June there will be an election to the Schorstein Research Fellowship in Medical Science. The Fellowship, of the annual value of £200, will be tenable for two years from Oct. 1st in any of the medical departments at Oxford. Candidates must be graduate members of the University, holding a registrable medical qualification, and must be under 35 years of age on Oct. 1st. They must submit their applications, in proper form, to the Dean of the Medical School, University Museum, not later than May 2nd.

University of London.

At University College Dr. C. S. Myers, F.R.S., will deliver the Hobhouse memorial lecture on the Absurdity of any Mind-Body Relation, at 5.30 P.M. on Thursday, May 19th. Three lectures on Human and Comparative Placentation, including the Early Stages of Human Development, will be given by Dr. Otto Grosser, professor of anatomy in the German University, Prague, at 5.15 P.M. on May 2nd, 5th, and 6th. Dr. W. R. Hess, professor of physiology in the University of Zurich, will deliver two lectures on the Autonomic Nervous System at 5.30 P.M. on May 12th and 13th.

The Senate will shortly consider applications for grants from the Thomas Smythe Hughes and Beaverbrook Medical Research Funds for the assistance of original medical research. Applications must be received in proper form not later than May 15th. Applications are also invited for the Laura de Saliceto studentship for the advancement of cancer research, which is of the value of £150 a year. Further particulars of the grants and studentship may be had from the Academic Registrar.

Our advertisement columns contain particulars of the Geoffrey Duveen travelling studentship for research in oto-rhino-laryngology, for which application is invited.

University of Birmingham.

The Ingleby lectures will be given in the Edmund-street Buildings at 4 P.M. on Thursdays, May 5th and 12th, by Prof. Seymour Barling, whose subject will be the Operative Treatment of Toxic Goitre. As already announced, the Withering lectures, on Some Aspects of Human Biology, will be given by Mr. C. J. Bond, at the same hour and place, on Wednesdays, April 20th and 27th, and May 4th, 11th, and 25th.

Hunterian Society.

The next award of the Society's gold medal will be made in 1932 for the best essay received on or before Dec. 31st. The competition is open to all general practitioners resident in Great Britain, Ireland, and the Channel Islands, and for this purpose the council define a general practitioner as one who is not established in a special branch of work or in consulting practice. The rules governing the award may be obtained from the secretary, Mr. Andrew McAllister, 79, Wimpole-street, W.1.

More Money than Patients.

Prudhoe Memorial Convalescent Home, Whitley Bay, Northumberland, has a credit balance of £936 but lacks a sufficiency of inmates, the number, entirely men, having fallen by 150 to 1007. The reasons given are the straitened resources of employers, workmen's societies and clubs, and the opening of the home at Conishead Priory for miners in the county of Durham. A subscriber of £2 2*s.* is entitled to send a convalescent for three weeks although the cost to the Home is £4 10*s.* 2*d.*

National Birth Control Association.

This association, with which is incorporated the Birth Control Investigation Committee, will hold a medical conference at the Caxton Hall, London, from May 20th to 22nd. The subject of the meetings and the names of the chairmen are as follows: Friday, May 20th, 2.30 P.M., Spermotoxins and Hormones (Sir Thomas Horder); May 21st, 10.30 A.M., Spermicidal Preparations and their Effects (Dr. C. P. Blacker); May 21st, 2.30 P.M., Methods at Present in use at Clinics (Dr. Killick Millard); May 22nd, 10.30 A.M., the Gräfenberg Ring and other Methods (Sir Humphry Rolleston). It is stated that the members of the conference will be medical officers of health and members of their staffs, research workers, doctors in hospitals and in private practice, and doctors and a few lay workers from the voluntary clinics. Particulars may be had from the secretary of the association at 25, Eccleston-street, London, S.W.1.

Royal Faculty of Physicians and Surgeons of Glasgow.

Sir D'Arcy Power will deliver the Finlayson memorial lecture in the Hall of the Faculty, 212, St. Vincent-street, Glasgow, at 4 P.M., on Thursday, April 21st. His subject will be the Progress of Surgery in a London Hospital 1880–1930, and all medical practitioners are invited to attend.

Indian Medical Service Dinner.

The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant, London, on Wednesday, June 15th, at 7.15 P.M. Major-General J. W. D. Megaw has been invited to take the chair. Tickets and all particulars may be had from the joint honorary secretary, Major Sir Thomas Carey Evans, Hammersmith Hospital, Ducane-road, London, W. 12.

Post-graduate Course for Ship Surgeons.

The first part of a course for ship surgeons has just begun in London under the auspices of the Seamen's Hospital Society, Greenwich. Further sections of the course will be held in the summer and autumn.

Post-graduate Course in Tuberculosis.

Under the auspices of the tuberculosis department of the Welsh National School of Medicine, and the Welsh National Memorial Association, a week's post-graduate course in tuberculosis will be held in Cardiff from June 1st. The provisional programme may be had from the hon. secretary for post-graduate courses, Joint Tuberculosis Council, 8, Highway-court, Beaconsfield, Bucks.

New Tuberculosis Clinic in Manchester.

On April 4th the Lord Mayor opened the new tuberculosis dispensary, or clinic, as it is to be called in future, which the Manchester public health committee has built opposite the Royal Infirmary. It will be the administrative centre of the tuberculosis scheme. The building has cost £22,000.

John Abernethy in a Broadcast Play.

A play about Dr. John Abernethy, written by Mr. Rudolph de Cordova and his wife, Miss Alicia Ramsey, is to be the first play broadcasted from the new Broadcasting House in London on May 2nd and 3rd. It was given over the wireless four times last year.

Torbay Hospital.

Last year this hospital admitted 2097 patients, as against 1941 in 1930 and 1668 in 1929; their average weekly cost was £2 18*s.* 4*d.*, and their average stay 22·4 days. Of the total ordinary income of £20,000 the contributory scheme provided £5685.

Anglo-Yugoslav Hospital, Belgrade.

Dr. Katherine Macphail, founder and medical superintendent of this hospital, states that children are being turned away nearly every day owing to lack of accommodation. This is one of the consequences of the closing of 20 out of the 50 beds owing to the reduction of support given by English friends of Serbia through the Save the Children Fund, which makes a special appeal for funds to maintain the work. Gifts may be sent to Mr. H. D. Watson, chairman and hon. treasurer, 40, Gordon-square, London, W.C.1.

Royal Microscopical Society.

At a meeting of this society to be held at the B.M.A. House, Tavistock-square, London W.C., at 4 for 5 P.M., on Wednesday, April 20th, Mr. Conrad Beck, the president, will open a discussion on the Microscopy of the Filtrable Viruses. He will be followed in the discussion by Mr. J. E. Barnard, F.R.S., Prof. J. C. G. Ledingham, F.R.S., Dr. S. P. Bedson, Mr. C. C. Hurst, Prof. J. McIntosh, Capt. S. R. Douglas, F.R.S., Mr. W. J. Elford, Dr. G. M. Findlay, Mr. B. K. Johnson, and others.

Hospital Visiting Days.

It is proposed to limit the visiting of patients in the Manchester municipal hospitals to three afternoons a week, and to issue only three visiting permits to the relations or friends of each patient. Hitherto visits could be paid every afternoon, and visiting has grown to such an extent as to interfere with the work of the wards. It is found that so many and such frequent visitors disturb the patients, retard their recovery by the discussion of "home worries," hinder the training of nurses, and make the wards dirty, while visitors are often persons whom the patients do not wish to see. On a recent afternoon 1300 visitors entered an institution in 70 minutes while on a Saturday the number exceeded 1800.

nonite, ⅓ inch across. not found in Liberia. and ad had it identified by Prof. Degner in Hamburg by Major M. Connolly in London. The town is. tells us, near the top of a hill, and below in the ey is a rice farm. On the way to this is an area d as the general latrine. lying at the head of a ll brook which carries fæces. &c.. to the stream ow. This brook enters at the top of a half-mile ch, which he found had been selected by reason ts nearness, its open access and sunlight. and its tle current. for the watering, washing, and bath- activities of the village women and children. e same physical advantages. and the fæcal con- nination. make the reach also a favourite for ter-snails. In a couple of hours Vogel got 517 *ysopsis globosa* and 178 *Planorbis pfeifferi* from reach; the physopsis had no *mansoni* cercariæ, t the planorbis had; and planorbis. kept a time quarantine to prove they were uninfected, were edily attacked by miracidia from a monkey ected by *S. mansoni*, with resulting sporocyst mation. The monkeys had been infected either ally or through the skin, and their fæces, tested by e Teleman method, showed *S. mansoni* ova 40–50 days, while male and female worms were nd post mortem in the portal and other veins. gel recommended that a new channel be dug the stream to sidetrack "the reach" and l its snails by drying, and that new watering- aces be made free from planorbis. Bridges or ank roads over swamps would reduce infections. says. but better arrangements for latrines are ost chiefly needed. Specific mass treatment of tives will, he thinks. do little good until these her measures are in train.

ANIMALS IN CAPTIVITY.

THE opening of the zoological park at Whipsnade st May has given the Zoological Society of London magnificent opportunity of showing what can be one to maintain the health of wild animals in aptivity. Last summer was not all that it should ave been and the winter has had severely cold spells, ut the majority of the animals at Whipsnade have hrived in all weathers. Two pigmy hippopotamuses om tropical West Africa, which spent several weeks n one of the large paddocks with no artificial heat, ut on weight and grew hair on their bodies. An lephant also grew abundant hair on its back. A umber of animals at Whipsnade have signified their esponse to the healthy life by breeding. among them aks, llamas. red and fallow deer. wallabies, muntjacs. nd even wolves. The policy at Whipsnade has been o allow all the animals the greatest possible amount of space and liberty, with the result that the public as made some complaint that few animals are to e seen. This is now being rectified partly by the nimals already there becoming so tame as to be asily visible, partly by the steady development of accommodation for others; there is already one den for lions in a reinforced chalk quarry, and a large enclosure of rough scrub is being fenced in to serve as a second den. Colonies of European and Canadian beavers have been introduced into three small permanent ponds, and some February swamps are being made permanent by puddling the flooded ground. Barley left standing on five acres affords cover for pheasants, partridges. and ground game, while the foxes which it was deemed prudent to evict when the park was enclosed are apt to return and make depredations on more peaceable inmates. Grey squirrels and rats have been destroyed. and numberless rabbits are transferred to the larder of the London gardens.

The health record at Regent's Park also is increasingly good. Last year only one monkey died of tubercle, and it was probably already infected on arrival. A kangaroo which died of tubercle in the pancreas was found by Dr. Stanley Griffith to harbour the avian type of bacillus. Enteritis, regarded as a good indication of the standard of cleanliness and general sanitation. falls steadily from year to year. Cat distemper only affected three recently imported leopard cubs. an immunity no doubt due in part to the provision of a new isolation ward. Rickets in young monkeys is being treated with increasing success with cod-liver oil and sun rays, but evidence is growing to show that the disease in civets and genets is not of the same character, and does not yield to the usual antirachitic treatment. Only one cancerous growth was found during the year—namely, a kidney tumour in a hamster. Kidney disease with dropsy is not an uncommon cause of death in elderly carnivores. Respiratory diseases being primarily climatic are found more difficult to control, and remain fairly constant; but speaking generally, the period required for acclimatisation has been steadily reduced. Finally, we should not overlook the service rendered to the eyes of sundry beasts by Miss Ida Mann, who removed a senile cataract from a Capuchin monkey, and needled the lens capsule of a young lemur with congenital cataract. with recovery of sight in each case. Altogether the zoo. old and new, affords the visiting public many useful lessons by analogy in adaptation to environment.

THE LADY CHICHESTER HOSPITAL.

THIS hospital at Hove, which is designed to receive cases of early nervous breakdown, had 45 patients in residence at the end of 1930, while its out-patient department saw 1778 patients during the year. Increasing demands upon the hospital have necessitated further extension, and a new department for men has been opened in coöperation with the Royal Sussex Hospital. There are now eight beds for men, 47 for women, and six for children. The financial position of the hospital causes great anxiety, but the demand for treatment is always greater than the available supply. Patients are put to bed at first and given plenty of rest, good food. fresh air, and sunlight. Occupational therapy, both in organised forms and by means of amusements and hobbies generally, forms a very important part of the treatment. Toxic foci are sought and eliminated, and hydrotherapy, massage, and electrical treatment are found valuable. A useful development has been the establishment of a system of "daily out-patients"—patients who spend their day at the hospital, but sleep out. The hospital has its own magazine, written, illustrated, and typed by the patients. Ex-patients are followed up and for those who live in the locality there is a weekly "club night" of entertainment, dancing, or lecture.

HYPERPYREXIAL HEAT-STROKE.

NOT long ago we commented on a number of papers on heat-stroke.[1] In their wake comes one from Australia. on Hyperpyrexial Heat-stroke, by K. G. Hearne.[2] This gives an excellent account of the climatic conditions which our troops had to contend with in Mesopotamia during the late war. The abnormal heat-wave—abnormal even for Mesopotamia—experienced in July, 1917, when for 18 consecutive days the maximum shade temperature averaged 119° F., provided a crop of hyperpyrexial cases which gave Dr. Hearne a valuable opportunity for clinical study. His experiences are recorded in detail, and while little fresh knowledge comes to light, much that has previously been conjectured receives ample confirmation. The chief interest of his paper lies in the success obtained in aborting threatened attacks. It is well proved that if suppression of sweating and frequency of micturition occurs, the sufferer should at once repair to the nearest sick-quarters for treatment. Dr. Hearne's experiences with hyperpyrexial attacks in troopships, and his deductions which rule out phlebotomus fever and malaria as primary causes of the condition, are decidedly helpful. It is perhaps a pity, however, that no mention is made of the presence or absence

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[1] THE LANCET, Feb. 13th, p. 358.
[2] Med. Jour. of Australia, Feb. 13th, p. 226.

NOTES, COMMENTS, AND ABSTRACTS

THE CIGARETTE HABIT.

AT a meeting of the Society for the Study of Inebriety on April 12th, with Lady BARRETT, the President, in the chair, Dr. J. D. ROLLESTON surveyed published reports on the effects of cigarette smoking. Cigarettes, he said, had not been smoked in England to any large extent until after the Crimean war, and women had not adopted the habit until late in the last century when ladies of the demi-monde had first taken to smoking. The habit had increased considerably at the time of the late European war, and it had been estimated that in America $922,500,000 was spent annually on cigarettes—a sum sufficient to build two and a half Panama canals. The percentage of nicotine in cigarette smoke was about half that in cigar or pipe smoke, but it contained a relatively large proportion of carbon monoxide, which was capable of producing the symptoms of mild carbon monoxide poisoning in persons who smoked more than 20 cigarettes a day. Cigarettes also contained traces of pyridine and furfural.

The process of cigarette smoking was rhythmical, soothing, and pleasant, but it was unquestionably a drug habit. There was no evidence in support of the popular view that cigarette smoke was antiseptic, and decay of teeth might progress in the mouths of heavy smokers. The habit reduced appetite and affected health, and was, in the view of some observers, one of the factors responsible for the increase of tuberculosis in young girls. There was also evidence to show that it was often associated with gastric or duodenal ulcer. The effect of cigarette smoking on the respiratory system was a local irritation affecting the pharynx, larynx, and trachea. Hildebrand attributed to the habit chronic bronchitis, spasm of the bronchi with bronchial asthma, and relaxation of the muscles of the bronchi. These results were quite likely to develop in nonsmokers who were constantly in a smoky atmosphere. The effects of excessive smoking on the cardiovascular system were increase in the pulse-rate, palpitation, arrhythmia, rise of blood pressure, and cardiac neuroses, with occasional development of the symptoms of angina pectoris. Few observations on the blood of heavy smokers had been recorded, but one case had been reported of a leech which, after tasting the blood of such a patient, had fallen off and died in convulsions. Nervous symptoms included tremor, giddiness, headache, and insomnia. Conjunctivitis sometimes occurred, but amblyopia was rare in cigarette smokers. The relation between cigarette smoking and cancer was debatable; it was thought by some to play the part of a chronic irritant in the production of leucoplakia of the lips and tongue. Cancer of the lung was increasing in incidence and was said to be relatively frequent in waiters and innkeepers who worked in a smoky atmosphere. Opinion was fairly unanimous that smoking was deleterious to young persons, and in America some attempt had been made to demonstrate a connexion between delinquency in children and cigarette smoking. He quoted the opinion of two observers that the allowance for an adult should be five cigarettes a day.

Sir ROBERT ARMSTRONG-JONES mentioned the case of some boys admitted to Claybury with mental symptoms following on the anæmia induced by excessive smoking. Smoking induced a passive, suggestible state in which images might be regarded as realities. On the other hand, cigarette smoking might act as an antidote to a disturbed mental state, and the London County Council had recently decided to spend a large sum yearly on tobacco for use in their lunatic asylums. He agreed that it was better that young or highly strung persons should not be allowed to smoke.

Dr. A. P. CAWADIAS pointed out that as the smokers far outnumbered the non-smokers, there must always be a preponderance of smokers among a group patients suffering from any disease. Tobacco smokin however, certainly had the effect of raising the bloo cholesterol, and in some patients this tended t produce changes in the arterial walls and endarterit obliterans. In another group of patients tobacc acted on the sympathetic nervous system and gav rise to gastro-intestinal symptoms. Cigarette smokin might be valuable in some cases, soothing the nervou system; in others it was deleterious.

Mr. W. MCADAM ECCLES pointed out that intermittent claudication was rare except in Polish Jew and that cigarette smoking was widespread, so tha some individual factor was probably operative i this condition. Gastric ulcer had at one time bee common in young women, owing, he considered, t septic teeth. Nowadays it was less common in youn women and much commoner in young men; h believed that cigarette smoking was partly responsib for the increase, coupled with the fact that youn women took more care of their teeth than youn men.

Dr. W. M. FELDMAN described a case of suspecte pyloric stenosis in an infant whose mother was heavy smoker. No signs of pyloric stenosis wer found on examination, and he suspected nicoti poisoning; anlaysis of the mother's milk, howeve revealed not a trace of nicotine. He suggested th the cigarette habit and delinquency in children mig both spring from some common cause instead standing in the relation of cause and effect.

Prof. LEONARD FINDLAY asked why the increase cigarette smoking in women should be associate in them, with a reduction in the incidence of gast ulcer. He thought the worst harm attributable cigarette smoking was an irritation of the upper passages, and he was not astonished that it shou be deleterious to tuberculous patients for th reason.

THE PREVENTION OF SCHISTOSOMIASIS.

SCHISTOSOMA infection, widespread in the tropi is of two sorts, due to *S. hæmatobium*, which attac mainly the genito-urinary system, or to *S. manso* which attacks the rectum. The ova in water devel miracidia, which in suitable water-snails ency themselves and give rise to free-swimming cercari These perforate the skin of people who wade or wa in water, or the intestinal mucosa of people w swallow them in drinking; and in the human bo they achieve their sexual stage. Prevention, ap from general hygiene, is by destruction of the wat snails particularly involved. These intermedi hosts are not yet in all areas certainly identifi and to their discovery in Liberia and French Guin Dr. Hans Vogel,[1] of the Hamburg Tropical Medici School, has devoted much skill and energy. Worki at the Bolahun Missionary Hospital in the north Liberia in the rainy season (April to September) 1930 he found that some 40 per cent. of the nati were infected with *S. hæmatobium*, and that t intermediate host was unknown. *Physopsis globos* believed to be the carrier in neighbouring Sierra Leo but no cercariæ came from the physopsis examin in Liberia, nor would miracidia attack physop there (480 snails examined). As to *S. mansoni*, wh causes infection in Liberia but rarely, the cases se are mostly in immigrants. Dr. Vogel made two tr to the near-by French native town, Tamassodou, wh *S. mansoni* infection was rife. He had difficulty obtaining fæces for examination, but children, temp by ices, would coöperate. Of 81 persons examin 75 (over 90 per cent.) were infected, and this gr difference was explained when, almost at once, he fou a water-snail, new to the area, *Planorbis pfeiff* which carried *S. mansoni*, a small shell like

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[1] Arch. f. Schiffs- u. Trop.-Hyg., March, 1932, p. 108.

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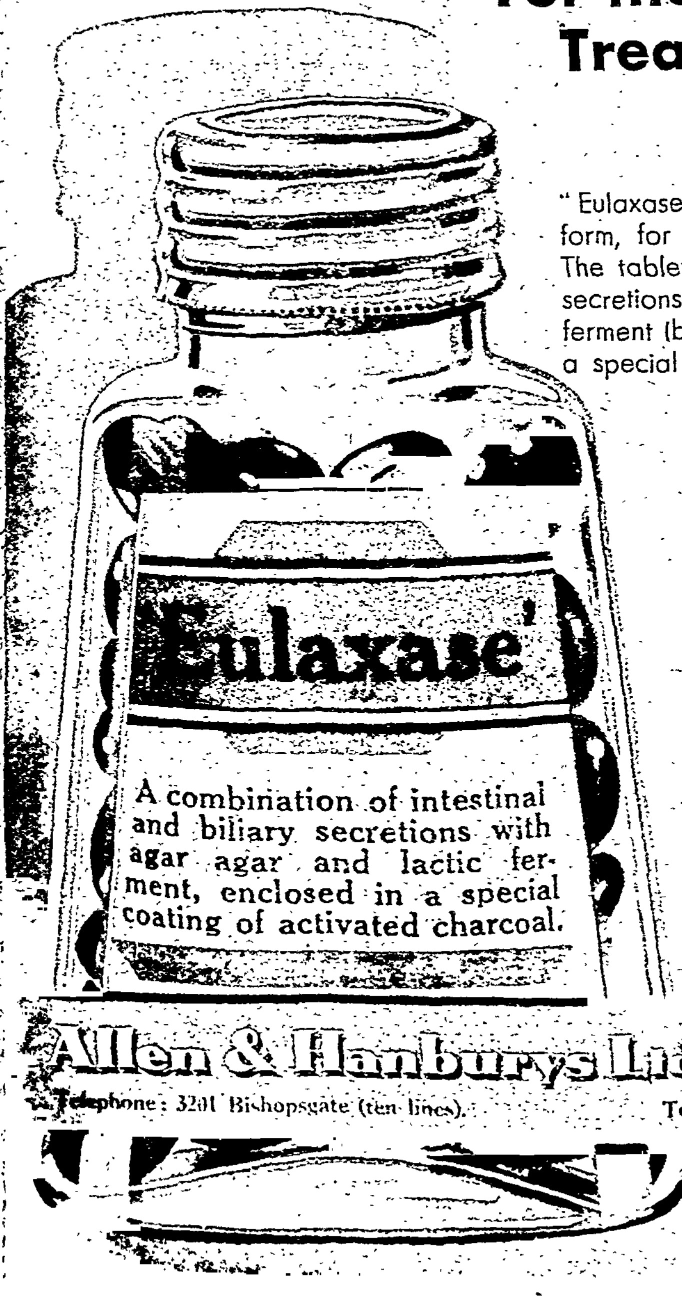
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[*See also pp.* 12, 26, & 27]

of indicanuria in his cases, for the discovery of indican would support the auto-intoxication theory which he dismisses as unlikely without confirmation. While it may be agreed that sweat suppression is a primary cause of heat hyperpyrexia, it is still quite probable that auto-intoxication plays a part.

CENTENARY OF C. J. HEWLETT AND SON, LTD.

WE have received a history of the house of C. J. Hewlett and Son, Ltd., put together from reports which have appeared in the pharmaceutical and scientific press, the occasion of the publication being the celebration this year of the centenary of the business. We have personal reasons for liking to think that the existence of a business for one hundred years is a proof not only of continuity but of progress.

The founder of the business, Mr. C. J. Hewlett, gained his knowledge of pharmacy by driving over England in a horse and gig as a commercial traveller for the now extinct firm of Tosswills. Between 1832 and 1870 he was associated with several partners in a business which was growing up on general lines, and in the latter year he was joined by his son, Mr. John Hewlett. The son struck out a special line by producing a number of high-grade non-secret pharmaceutical preparations, and establishing a large trade in them overseas. The founder of the firm died at the beginning of this century at the age of 90, and shortly afterwards the business was turned into a limited company, among the directors being his son, Mr. John Hewlett, his grandson, Mr. Vivian Hewlett, and Mr. J. D. Allman, the senior representative of the firm in the home markets. During the war the firm did excellent service in supplying drugs to hospitals, doctors, and pharmacists at home and abroad. Shortly afterwards Mr. John Hewlett, died, and was succeeded as chairman by his son, Mr. Vivian Hewlett, Mr. E. J. Millard being associated with him as managing director. Under their activities the firm has made great developments, material evidence of which is supplied by the extension of premises and the establishment, under Mr. Norman Millard, of an excellent analytical laboratory.

A centenary dinner will be held on Saturday April 23rd, at the Abercorn Rooms, Bishopsgate, E.C

ACID-BASE EQUILIBRIUM IN SKIN DISEASE

G. Milian and L. Brodier,[1] in a review of dermatological topics, quote some recent observations by Spillmann and Verain. Taking —7·35 as the normal pH, and using an electrometric method of determination, these workers find a definite acid-base disturbance in the blood of people suffering from eczema, eczematides, urticaria, prurigo, psoriasis, and dermatitis herpetiforme. They believe that this loss of equilibrium plays an important part in exudative affections, and eczema in particular. Twenty-two per cent. of the cases tended to the acid side, and 73 per cent. to the alkaline; there was considerable difference in the amount of variation from case to case, and apparently no relation to the severity of the clinical manifestations. It is of some value to note that in their experience a return towards normal in the acid-base balance is of good prognostic import, while persistence of the disturbance indicates the probability of a relapse. From the therapeutic point of view it is easier to rectify the acid tendency with sodium bicarbonate than to alter the alkaline tendency by means of phosphoric acid, calcium chloride in large doses, or autohæmotherapy. There is neither an "acid" nor an "alkaline" dermatosis. It is the loss of balance between the two which is of pathogenic importance, and often this is itself only a sign or effect of another disturbance, endocrine or vago-sympathetic. It follows that in the effort to counteract the ascertainable loss of acid-base balance, the physician must not shut his eyes to the possibilities of more fundamental factors.

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[1] Paris Méd., 1932, No. 3, p. 45.

TOURS IN RUSSIA.

As announced in a letter in our issue of March 26th, the Society for Cultural Relations with the U.S has arranged three tours in Russia, leaving L on July 16th, August 13th, and Sept. 10th. these dates cut across those of the British Me Association's centenary meeting in London (from July 21st) and the Physiological Society's meeting in Rome (August 29th), it has been decided to arrange an earlier tour if enough applications are received before May 20th.

The party would leave London on June 18th for a tour of Leningrad, Moscow, Nijni-Novgorod, and down the Volga to Stalingrad, returning to London by boat, and arriving on, or about, July 12th. The charge would be not more than £35 (inclusive of return fares, hotels, tips, food, theatres, and interpreters). Further particulars may be had from the secretary of the Society, 1, Montague-street, London

MYASTHENIA GRAVIS.

"INQUIRER" writes: I would be very grateful to learn from any reader where to obtain some recent information concerning the ætiology and treatment of myasthenia gravis. The patient is a doctor.

Appointments

EDBROOKE, F. R., M.B., Ch.B. Brist., D.P.H., has been appointed Medical Officer of Health, Coulsdon, Purley, Beddington and Wallington Councils.

HOWIE, L. J., M.B., Ch.B. Edin., Asst. Medical Officer of Health and Asst. Tuberculosis Officer, Midlothian, West Lothian and Peebles.

MCGARRITY, J., M.D. Edin., D.P.H., Medical Superintendent of the City Hospital, Little Bromwich, Birmingham.

TOPPING, M. D., Ch.B. Aberd., D.P.H., Medical Superintendent in the L.C.C. Public Health Dept.

Certifying Surgeons under the Factory and Workshop Acts: BRIGG, D. A., M.B., B.S. Lond. (Chipping Norton); CROSS, R. M. S., L.R.C.P. Lond., M.R.C.S. (Petersfield); and HAIR, A., L.R.C.P. Lond., M.R.C.S., D.P.H. (Presteign Radnor).

Births, Marriages, and Deaths

BIRTHS.

HOWELL.—On April 7th, the wife of Dr. J. Bonnell Howell, Brook Green, W., of a daughter.

SMYTH.—On April 10th, at Wimpole-street, W., the wife of Michael Smyth, F.R.C.S., of a son.

MARRIAGES.

BIGBY—NEW.—On April 9th, at Southwark Cathedral, Dr. William Louis Murray Bigby to Hilda Marian, younger daughter of the late Mr. and Mrs. G. H. New, of Cheltenham.

HAMILL—FINDLATER.—On April 7th, at Our Lady of Victories, Kensington, John Molyneux Hamill, O.B.E., M.D., D.Sc., to Lesley, daughter of the late R. B. N. Findlater and Mrs. Findlater, of Queen's-gate, S.W.

DEATHS.

APPLETON.—On April 6th, at Canford Cliffs, Bournemouth, James Enderby Appleton, M.R.C.S., L.D.S. Eng., of Penticton, British Columbia, late of "Linda," Poole-road, Bournemouth.

[illegible] 10th, at Burntwood-lane, Wandsworth, [illegible] M.R.C.S., L.R.C.P., L.D.S., late of [illegible] Hyde Park, and North Walsham.

[illegible] d, Richard Lawson, M.R.C.S., L.R.C.P., late of Balham Hill.

WADDY.—On April 8th, Henry Edward Waddy, M.R.C.S., L.R.C.P. D.P.H. Camb., of Rhossili, Brunswick-road, Gloucester.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

VICTORIA PARK HOSPITAL.—It was reported at the annual meeting last week of the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E., that trade depression has reduced annual subscriptions and patients' contributions, while payments by county authorities in respect of treatment of their patients have also fallen off to a great extent because these bodies are increasingly building their own hospitals and sanatoriums.

ADDRESSES AND ORIGINAL ARTICLES

THE RÔLE OF THE HÆMOLYTIC STREPTOCOCCI IN INFECTIVE DISEASE.

C. C. OKELL, M.C., M.B. CAMB., M.R.C.P. LOND.,
PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY OF LONDON, AND BACTERIOLOGIST TO UNIVERSITY COLLEGE HOSPITAL, LONDON.

LECTURE III.

CLINICAL AND EPIDEMIOLOGICAL INTER-RELATIONSHIPS IN STREPTOCOCCAL DISEASE.*

IN my previous lectures I have discussed some of e more general features of pathogenic effects due the hæmolytic streptococci and have tried to tablish the view that a large number of streptococci om the most diverse sources in human disease ave apparently the same weapons of attack, a rogenic property and an erythrogenic toxin. That hile one or other of these weapons may be predominntly evident in a given human disease, under perimental conditions potentialities in both direcons are very general, if not universal, among the emolytic streptococci.

"If anything is established," said Cohnheim, it is what may be called the distinct individuality f the different infectious diseases," but in recent ears we have come to recognise that certain balances etween host and parasite may produce very dissimilar clinical entities though the species of parasite nd host remain the same. Thus herpes and chickenox are both diseases with distinct "individualities" hough we may see the same virus producing the wo diseases in *different individuals.* It is not ne of the least striking things about streptococcal disease that bacteria so similar in form and experimental properties should give rise to so many and well-defined clinical and epidemiological types of disease. Since the earliest days of streptococcal esearch two views have been held as to the relationhip of the streptococci to disease. The first is hat each well-defined clinical entity is associated with a special kind of streptococcus. This, the "specificity" view, is expressed in the use of such terms as *S. scarlatinæ*, *S. erysipelatis*, *S. pyogenes*, &c., as specific names for the streptococci associated with the different diseases. The second view is that different diseases due to the hæmolytic streptococci are due essentially to one species of streptococcus. According to this view, factors of varying virulence and toxicity on one side and varying susceptibility on the other are held to account for the different streptococcal diseases outwardly so unlike. This is what I have called the "unitarian" view. I cannot here follow the varying fortunes of these two rival theories, though the history in itself is full of interest. It is perhaps sufficient to say that before the publications of the Dicks and Dochez in 1924, a more or less unitarian view held sway and was expressed by such workers as Marmorek,[1] Neufeld,[2] and Aronson.[3]

The far-reaching influence of Jochmann's[4] view, that scarlet fever was not due to streptococcal infection allowed the problem of scarlet fever to be shelved and therefore one of the outstanding difficulties in accepting the unitarian view was avoided.

The work of the Dicks and Dochez, though it only put on a more solid footing the views held many years previously by Moser, Gabritschevsky and Savchenko on the toxigenicity of scarlet fever streptococci. at once led nearly all observers to focus on the specificity view because at first sight it was thought that only such a view would be in accord with the peculiar immunological properties of the erythrogenic toxin they described. A further encouragement to the specificity view was given by the work of Birkhaug on erysipelas. This observer came to the conclusion that the pathogenic effects of hæmolytic streptococci from cases of erysipelas had specific characters; he also studied a toxin resembling that obtained from scarlatinal strains, but he considered it to be immunologically distinct. I may mention that my colleagues and I have been unable to obtain any experimental evidence for the existence of specific characters in the pathogenicity of strains from erysipelas, nor were we able to distinguish between toxins obtained from erysipelas strains and those from scarlatinal strains.[5]

A Unitarian Interpretation.

I now propose to attempt an interpretation of the clinical and epidemiological features of streptococcal diseases accepting as basis the "unitarian" view of the streptococci. Such a sketch can only be made in outline and tentatively drawn. Modern bacteriological and immunological methods provide powerful weapons of investigation which have as yet been only half-heartedly employed in the clinical and epidemiological fields. A more thorough-going application of these methods would undoubtedly clear up some of the difficulty which at present surrounds the inter-relationships of streptococcal disease.

SCARLET FEVER.

It is not necessary to marshall the evidence in favour of the belief that scarlet fever is entirely an infection with hæmolytic streptococci. This has been done many times during the past few years and it would be difficult to find any serious flaw in the evidence. Uncomplicated scarlet fever may be looked upon in the main as a local infection of the nasopharynx due to hæmolytic streptococci with little if any deep penetration of the micro-organism, but accompanied by a considerable absorption of its erythrogenic toxin. Blake and Trask[6] have actually shown that the toxin may reach a high level in the blood of patients in the early stages of scarlet fever. The systemic effects of the infection rapidly disappear with the development of antitoxin in the blood which takes place after the first few days of the disease. The clinical condition obviously suggests that the streptococcus is in a biological phase during which it readily secretes its toxin, a suggestion supported by the observation that the majority of strains from scarlatinal throats are exceptionally powerful producers of toxin in vitro. Some strains, such as the Dochez and Dick strains, maintain their in vitro toxigenic properties uninfluenced by several years of subculture; other strains I have met with appeared to lose their toxigenic power after a few weeks of subculture.

That certain strains remain more constantly in a toxigenic phase than others may be deduced from the work of Griffith and his co-workers. Griffith's four types may be looked upon as epidemic scarlatinal strains, and between 1926 and 1930 Allison[7] found that types *II.* and *III.* accounted for 42·6 per cent. and all four types together for

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* The Third Milroy lecture for 1932 delivered before the Royal College of Physicians of London on Feb. 25th. Lectures I. and II. have appeared in previous issues of THE LANCET.

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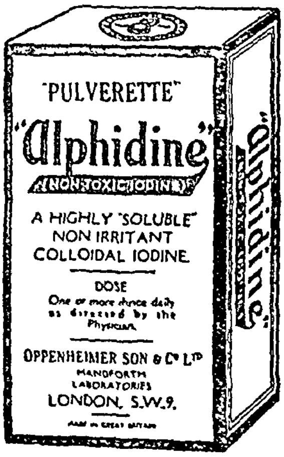

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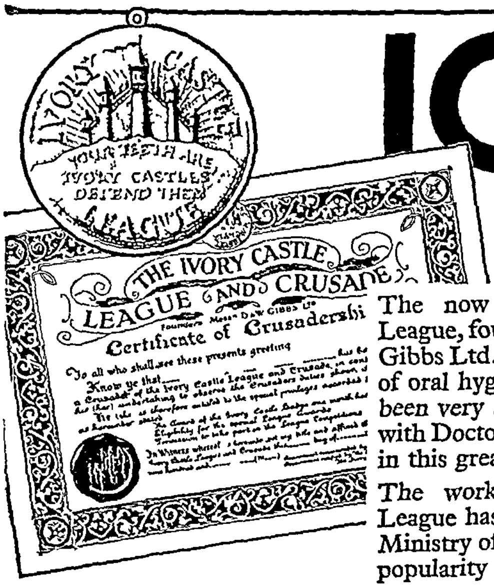
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the Ministry of Health. It is not too much to that our hospital ear and throat departments are nly occupied in dealing with the results of its ages. When we consider that the streptococci nd in this condition have not only obvious pyogenic rer but can also produce the erythrogenic toxin ritro it is very difficult to draw a line between it scarlet fever. Every medical man must have met h epidemics, small or large, in which every feature complication of scarlet fever occurs with the eption of those referable to a high degree of soning with the specific toxin—that is to say the h. Perhaps I may be permitted to quote a small break in my own experience.

child of 8, Dick-positive, contracted an acute septic oat, presumably from her schoolmistress who was ilarly affected. The onset was sudden with high fever, quent pulse, and furred tongue, and the infection spread idly and relatively painlessly to the middle ear on both s. The disease was transmitted in rapid succession wo adults in the same household. In both the latter disease was severe but no complications followed. m the throat of each of the three cases an almost pure ture of hæmolytic streptococci was obtained. These ptococci were found in the laboratory to be moderately d producers of erythrogenic toxin.

f, as we could no doubt have done experimentally, had injected the toxin thus made we would have npleted the picture of scarlet fever. The following tance, also in my own experience, illustrates but a different way the difficulties of drawing a sharp tinction between these throat conditions.

carlet fever had broken out in a school and the school closed. Three children who were not thought to have n in particularly close contact with infection were t home and were isolated very completely from other ldren by an intelligent mother. One child then developed nild pyrexia and septic sore-throat and this was soon owed by the development of a faint patchy rash not all characteristic of scarlet fever. This child was at e isolated from her fellows. A day later another of children developed fever and sore-throat, without a ce of rash. The second victim was promptly isolated h her already affected sister. Both children were k-positive and from the throat of each a profuse growth hæmolytic streptococci was obtained. The streptococci lated were moderately potent producers of erythrogenic in *in vitro*. The rash of the first child did not give ultz-Charlton blanching; it was indeed of a type suitable for the application of the test.

At the end of a week the two affected children had overed from their illness. They were retested by the k test and found still fully positive and the cultures from ir throats showed only a few hæmolytic colonies. On the lications of those observations it was considered that disease was not likely to be scarlet fever and as isolation angements were proving a difficult domestic problem it s decided to release the two elder children from quarantine d allow them to mix with their little sister who was also ck-positive. Two days later this child developed a h fever and sore-throat and in another 24 hours was vered with a typical scarlet rash. From this child also almost pure culture of hæmolytic streptococci was tained, though the throat had been negative at the lier examination. All these children were being carefully lated from other children and there was no known case infection in the immediate neighbourhood.

Such a sequence suggests strongly that the third d typical case had been generated in direct ccession to the other two cases which certainly uld not have been diagnosed as scarlet fever. he process involved seemed closely similar to the altation of virulence obtained in the laboratory animal passage. It is interesting to conjecture hat would have happened if nature's experiment d been allowed to continue without interference d the two recovered, but still Dick-positive elder ildren had been re-exposed to the infection which ey had themselves so obviously propagated. any outbreaks are recorded in which sore-throat ithout rash and typical scarlet fever seem to have been propagated indifferently, including recent instances reported by Stevens and Dochez[16] and by Butler,[17] and Glover and Griffith.[18] In most of these epidemics there has been no record of the Dick reaction of the infected individual, so we cannot easily separate the contribution of parasite and host in producing such variable effects. Since Dick testing has been carried out it has been repeatedly observed that Dick-negative individuals appeared to contract septic throats from scarlatinal patients without showing any sign of rash (Stevens,[19] Nicholls,[20] and others). These various anomalies of streptococcal infection illustrate how impossible it is to give to streptococcal diseases separate clinical names which will imply any specific ætiology.

The Dicks[21] in 1921, in a series of 30 volunteers, produced sore-throat without rash in seven by inoculating their throats with scarlatinal streptococci. Subsequently they found that the same scarlatinal streptococcus could produce typical scarlet fever in some patients and simple sore-throat in others. More recently again they have shown in another human experiment that streptococci from erysipelas inoculated into the throats of five volunteers produced an acute sore-throat in three. Unfortunately the susceptibility of the subjects as judged by the Dick test is not indicated in any of these experiments. We may well ask ourselves what would happen if a streptococcus from a case of erysipelas or suppuration, selected for its high toxigenic power, were inoculated into the throat of a Dick-positive child. The experiment might be crucial for the unitarian view.

It has been, I think, the belief of nearly all experienced observers from the time of Withering to the present day that scarlatinal epidemics may arise by the gradual development of sore-throat cases and eventually die away in atypical cases before the epidemic is finally extinguished. Withering[22] indeed held the view that scarlet fever as he saw it in Birmingham in 1778 and what Fothergill and Huxham described as ulcerated sore-throat are one species of disease, "that they owe their existence to the same specific contagion; that the varieties in their appearance depend upon contingent circumstances, and that the greatest differences are not greater than those of distinct and confluent small-pox." Are we to name these epidemics sore-throat or scarlet fever? Surely it is simpler to suppose that the streptococcus, in the first place non-scarlatinal, has exalted its toxigenicity by passage from individual to individual until it arrives at a phase when it can produce scarlet fever in almost every Dick-positive individual it invades. And if we recognise that so many streptococci from normal persons and those affected with non-scarlatinal diseases have the capacity for producing the erythrogenic toxin, are we not forced to admit the possibility that almost any hæmolytic streptococcus may at times generate scarlet fever?

The view here expressed obtains support from the recent work of Glover and Griffith[18] on school epidemics of naso-pharyngeal disease. The gist of this as it affects the present subject is that these workers have shown that when epidemics of influenza, severe common cold, measles, and tonsillitis occur in schools there appears to be an exaltation of the epidemic activities of hæmolytic streptococci both in the pyogenic and the erythrotoxic direction. Not only do such pyogenic affections as otitis and mastoid disease become common, but cases of scarlet fever may arise apparently de novo. These observations are of great interest, for they afford a handsome confirmation of the *unitarian view*, and one that we had every right to expect ex hypothesi.

The reverse also seems to hold, that because a hæmolytic streptococcus is derived from a case of scarlet fever it is by no means necessarily capable of

63·4 per cent. of 600 cases observed in England. Excepting for their peculiarities in agglutination Griffith's strains *show only quantitative differences from other strains of hæmolytic streptococci, and we are fortunate in obtaining* knowledge of their serological peculiarities.

The streptococci occurring in scarlet fever, at least in the disease as we see it to-day, are much less active in their pyogenic and invasive than in their toxigenic properties, but the pyogenic and invasive properties show themselves in the complications—from local suppurations which are still sufficiently common to septicæmia which is fortunately more rare. I think that there is little doubt from the history of the older and more fatal epidemics of scarlet fever that at one time the pyogenic and invasive factors were very much more important than at present. The great and fatal epidemics of the latter part of the eighteenth and the earlier part of the nineteenth centuries seem to have owed their terrors to the virulence of their pyogenic effects rather than to symptoms ascribable to an exaltation in the power of producing erythrogenic toxin.

SURGICAL SCARLET FEVER.

Few forms of streptococcal disease raise more interesting problems in relationship to the "unitarian" view than the so-called surgical scarlet fever. On the whole it is a subject with a meagre literature; Alice Hamilton [8] in an excellent review estimated that in 1904 there were useful records of less than 200 such cases; but it attracted considerable attention in the 'sixties and 'seventies of last century.

Howse,[9] at that time a surgeon to Guy's Hospital, gives an excellent description of an epidemic occurring in the Astley Cooper ward of that hospital in 1878. He quite clearly recognised that these instances following surgical operations and burns could not be distinguished from ordinary scarlet fever, but he frequently found it difficult *to explain how they arose and he suggests that before the* introduction of Listerian methods such cases frequently merged into septicæmia.

In the same volume of the *Guy's Hospital Reports* [10] there also appears an article which gives a very complete account of cases of surgical scarlet fever occurring at the Evelina Hospital during the 'seventies. The material was provided by W. E. Paley but was worked up with a commentary by James Goodhart. Goodhart came to the conclusion that these were true cases of scarlet fever, and from a study of the grouping of them he considered that the infection passed from patient to patient. He adds that almost all the patients were removed to the fever ward yet there was no instance of them afterwards contracting scarlet fever there.

Sir James Paget [11] in a clinical lecture given at St. Bartholomew's Hospital in 1863 devoted considerable attention to surgical scarlet fever. "By some," he says, "these cases may be supposed to have been only casual coincidences of scarlatina with surgical diseases, but, if this were so, we ought to find a proportionate number of cases among surgical patients not operated upon. But this does not happen."

At the time that these observers wrote the specific propagation of disease was more or less rigidly held and although a typical scarlet fever case could rarely be found to account for the origin of the infection it was believed that it did arise from such a source. A very instructive case was reported in the *British Medical Journal* in 1879 by Ffolliott [12] of Peshawar. A private of the Fusiliers at Ali Musjid, carelessly threw a lighted match on some gun-powder and was severely burnt on the leg, arms, and face. Four days later he developed a typical scarlatinal rash which ran a typical course and was followed by desquamation. Ffolliott, though he admits that scarlet fever was not unknown in India, had never encountered a case in twelve years' service and there was no such disease known in the camp or its surroundings. Joseph Fayrer, whose experience in Indian practice was at that time unrivalled, stated that he had only seen two cases of scarlet fever in India, both in European children and both clearly traceable to a box of infectious clothes sent out in a recently arrived steamer. This seems to be a particularly clear case of surgical scarlet fever arising de novo, but it will be generally admitted that it is usually impossible to trace these cases to a definitely scarlatinal source of infection. A passage from Creighton implying a unitarian opinion is worth quoting as indicating the views of a very acute student of epidemic disease. He states:—

> "It happens from time to time in surgical wards of hospitals for children where many cases of suppurating diseases (especially of the bones or joints) are aggregated and kept together, that groups of the patients acquire a *scarlet rash, or an erysipelas rash, or a hybrid form of* rash—along with the constitutional symptoms of scarlatina," and he adds, "it is not without significance that there may be an element of erysipelas in such cases." [13]

The so-called surgical scarlet fever has not yet been adequately investigated by modern methods. There seems little doubt that on the surface of burns and extensive wounds the conditions for the multiplication and activity of streptococci are closely similar to those obtaining in the throat. Deep invasion from established granulating surfaces does not readily take place, but toxin production and absorption are probably little hampered. Thus, if the streptococcus reaches a sufficiently toxigenic level we can understand that a condition outwardly resembling scarlet fever may take place as a result of surface infection of a wound and it is unnecessary to assume a pre-existing scarlatinal source. Very few direct bacteriological observations have been made on these cases which might permit us to assess the relative parts played by throat infection and wound infection. Toyoda [14] states that the throats of seven cases of surgical scarlet fever were negative for hæmolytic streptococci and in a recent case which has come under my notice of a child suffering from a burn who developed scarlet fever without there being any obvious scarlatinal source of infection, the throat was negative, while the swabs from the surface of the burn grew a copious and almost pure culture of hæmolytic streptococci. It is worthy of note that while ordinary scarlet fever has occasionally been recorded as having been propagated from a surgical case, this is by no means the rule. It would be interesting to know whether surgical scarlet fever tends to occur, as we should expect, in Dick-positive persons, whether the reaction becomes negative at the end of the disease, and whether the early rash in such cases regularly gives a positive Schultz-Charlton reaction as it certainly did in a case recently in University College Hospital.

INFECTIOUS SORE-THROAT.

Under the designation of streptococcal sore-throat we probably have to recognise more than one ætiological entity. There is a common sore-throat, amounting to little more than a dryness of the pharynx, which is often found to be associated with a profuse growth of streptococci of the non-hæmolytic series. There is also the well-recognised "septic" type of infectious sore-throat which is almost invariably associated with the presence of hæmolytic streptococci. That this is a highly infectious condition is generally admitted, but considering the enormous toll of ill-health and permanent disability it exacts from the ordinary population it has been given little enough bacteriological and epidemiological attention, though this omission is now being made good by the work of Glover [15] and his colleagues type of case, which as John Hunter says, "Spreads r a prodigious surface of skin, while it does not ct even the cellular membrane beneath," as due a widespread superficial spread of infection along planes of the skin proper and accompanied by arked local production of the erythrogenic toxin. es streptococcal antitoxin block the advance of fiery erythema of such cases? Are such cases k-positive at onset and does their reaction become ative coincidently with the disappearance of nptoms? These are questions which as yet ve been insufficiently answered, nevertheless their swers might lead to a better understanding of the thogenesis of erysipelas. We must, however, ognise that there is another clinical condition ually classed under the name of erysipelas, the called phlegmonous erysipelas which is a cellu-is of peculiar distribution rather than infection the skin. In many of such cases the bright scarla-iform rash is absent, hence it is not necessary to voke the agency of erythrogenic toxin in explanation. or is it a disease likely to be confined to the ck-positive.

While it has been recognised for several generations at erysipelas is a contagious disease, propagating elf not only as erysipelas but in other septic anifestations, it is very rare indeed to find it opagated with anything like the uniformity of arlet fever. But there is reason to suppose that various occasions in the past erysipelas has tained an epidemic "constitution"—to use the d word—in which it could propagate itself virulently d with great consistency. Brereton,[42] of Dublin, 1826 described an epidemic in which seven cases facial erysipelas (three in contiguous beds) occurred ithin four days in one hospital and many other stances of epidemic spread are referred to in illmann's [43] well-known work on erysipelas published 1880.

PUERPERAL FEVER.

In pre-Listerian days puerperal fever, like erysipelas, as a disease of institutions, and the great majority f epidemics which Hirsch records took place in the ospitals, which were often veritably death-traps o the unfortunate women who entered them. The anitary reform of lying-in hospitals, of which Hirsch imself was so ardent an advocate, appears to have ed to a very different distribution of cases, so that n recent years research has found itself seriously andicapped because the disease is met with so arely in hospitals and the enthusiastic band of workers who have recently in England reopened the ttack against the maternal mortality shown in he Registrar-General's Returns have found it ifficult to find enough collected cases for their nquiries and study.

All modern bacteriological investigation has confirmed the view that serious puerperal infection is nearly always due to the hæmolytic streptococci and the most recent work has been mainly concerned in tracing the paths by which these bacteria reach the patient. Nor has modern work indicated that we can pick and choose between hæmolytic streptococci with regard to their potency in generating puerperal infection. The parturient uterus, as the older observers surmised, shows itself vulnerable to hæmolytic streptococci from the most diverse sources and of the most diverse types as judged by the laboratory tests now in use. Fortunately we can no longer study the terrible outbreaks of concurrent erysipelas and puerperal fever of which we read in medical writings of the early nineteenth century, admirably collected and studied by Hirsch.[44] It should be remembered too, that apart from cases of erysipelas generating puerperal fever there are many instances on record of the reverse process, in which puerperal fever has appeared to generate erysipelas; instance the now happily almost extinct erysipelas neonatorum of which Trousseau [45] has left us such an excellent account. But it is possible to illustrate the common potentialities of the hæmolytic streptococcus by the work that has been done in study of the sporadic and scattered cases of this scourge of maternity, for bacteriology can be brought into play when the problem is too minute for the coarser methods of epidemiological inquiry. Of this recent work the most interesting results seem to me to have been those in which infection has been traced from person to person by bacteriological methods which one might almost compare with the methods used in the detection of crime. In this work of tracing the individual strain streptococcus in its nefarious career, Taylor and Wright [46] have used as their "marks of identification" the cultural and *fermentative peculiarities* of the infecting streptococcus, while J. Smith [47] has employed the more delicate criterion of its antigenic make-up. Taylor and Wright and also Smith recognise that infection with the hæmolytic streptococci which are present in the genital canal in 2 or 3 per cent. of normal labours is a negligible factor in the production of puerperal sepsis compared with that of streptococci which reach the uterus after labour. Thus we have bacteriological confirmation of the older epidemiological views of Charles White, Oliver Wendell Holmes, and Semmelweis which have for long been the basis of obstetric practice in the prevention of puerperal sepsis.

Of 13 cases of puerperal fever due to hæmolytic streptococci studied by Smith, all but one appeared from the evidence of agglutination tests to have been derived from a source of infection outside the patient herself. One case, however, he records in which the source of infection obviously arose from a septic focus on the hand of the patient herself. In one case of septic abortion he found that the streptococcus isolated from the uterus was serologically identical with that isolated from the patient's nose. In two of Taylor and Wright's cases the source of infection appeared to be the patient's own throat, though an extrinsic source for the uterine infection was usually found. It seems then that an infection against which the patient is not prepared carries much more risk than self-infection with the streptococcus already present in the patient and with which she has struck some sort of a stable balance. The observations of these modern workers on the minutiæ of epidemic spread are an encouragement to redoubled aseptic precautions at childbirth, because they emphasise the importance of sources of infection, both within and without the patient, which are so trivial in outward appearance as to escape notice.

The connexion between puerperal fever and scarlet fever is by no means so clear as that between puerperal fever and erysipelas, and in the past many contrary opinions have been expressed upon it. As bearing on the interchangeability of puerperal and scarlatinal infection data derived from pre-Listerian records diverge considerably from those of modern sources. Withering, having heard of three successive deaths following scarlet fever in the puerperium, came to the conclusion that "it was particularly fatal to lying-in women," a view later held by Trousseau and more producing scarlet fever in other persons. It is generally recognised that anything up to 50 per cent. of scarlet fever patients kept for a reasonable period in an isolation hospital have in their throats hæmolytic streptococci which are in many instances serologically of the same type as the original infecting micro-organisms.[23] Such patients when they are discharged to their homes only generate a very small proportion of "return cases," rarely more than 2 or 3 per cent. This gives ground for the presumption that during sojourn in the throats of convalescents the streptococcus passes out of the epidemic scarlatinal phase.

Creighton's remark may here be quoted that "Every medical practitioner knows, if some laymen and legislators do not, that scarlatina is sometimes highly contagious, and sometimes hardly contagious at all," much the same view as that held by that fine observer Robert Willan over fifty years before.

The care which is taken in modern hospitals to avoid the aggregation of septic streptococcal cases prevents us from seeing nowadays the natural propagation and exaltation of streptococcal epidemics lamentably common in such institutions during the earlier part of the last century. But in one department at least of hospital practice from causes which are not at all easily controlled, something of the old epidemiological *mis-en-scène* is maintained. I refer to the throat and ear departments of hospitals. Here from the nature of the work, it is difficult to prevent the aggregation of septic cases and quasi-septic cases (under which heading we must, I think, include the majority of tonsillectomy cases). In many such departments scarlet fever is a recurring trouble though every care is taken to prevent the entrance of frankly scarlatinal infection. Anna Williams [24] has found that from 25 cases of excised tonsils with no history of recent exposure to scarlet fever, 14 strains of hæmolytic streptococci were isolated and of these, six produced toxic filtrates neutralised by convalescent scarlet fever serum. It does not then seem necessary to regard scarlatinal cases occurring under these conditions as due to the introduction of scarlet fever, as such, into the hospital. If there is anything in the conception of exaltation of virulence or toxigenicity by human passage we have here ideal conditions for both dissemination and exaltation. Even if we exclude the special problem of scarlet fever from consideration, the epidemiological conditions met with in throat wards of hospitals are worthy of more study than seems to have been given to them. Is it not to beg the question to accept that the cases of otitis and mastoid disease which sufficiently frequently complicate tonsillectomy are due merely to the "stirring up" of intrinsic infection? That latent infection can readily be stirred up by operative injury no one would deny, but in "stirring up" a latent infection in the individual due to such a versatile, dangerous, and readily disseminable bacterium as the hæmolytic streptococcus may not we also, by passing a strain from one who is tolerant to it to one who is not, be "stirring up" an epidemic? I have been able to find no statistics bearing on the relative frequency of complications after tonsillectomy in patients operated upon in hospitals and in private practice, but if they were available they might be interesting. Joe [25] quotes the saying of an ear and throat surgeon who said "that sometimes while the patients on whom he had performed tonsillectomy were contracting scarlet fever, the patients on whom he had performed mastoid operations were beginning to suffer from erysipelas." This is a modern saying, but it will have a familiar ring to anyone who has looked into the history of septic infections in pre-Listerian times.†

Rheumatic Fever.—I do not propose to consider the possible rôle of the hæmolytic streptococci in the causation of rheumatic fever though this has been the subject of much interesting work by Schlesinger,[26] Coburn,[27] Sheldon, Collis,[29] and Glover and Griffith [30] during the last two or three years. The admirable epidemiological inquiries of Glover and Griffith give much weight to the views originally put forward by Mantle,[31] of Durham, in 1885, as to the close connexion between tonsillitis and rheumatic disease, but the majority of those who are most conversant with the clinical and pathological features of rheumatic disease seem to find it difficult to link them with the known pathological features of infection with the hæmolytic streptococci. On the principle laid down by Hume in his "Essay on Miracles," that the greater the improbability the more rigid should be the proof, we can only await with caution further developments along this line of work.

ERYSIPELAS.

Fehleisen [32] in his classical paper written in 1882 records having produced typical erysipelas in six out of seven human beings by scratching into their skins a pure culture of a streptococcus from erysipelas. Fehleisen held that his coccus was not identical with the streptococcus which Ogston had previously isolated from pus. The specificity of the erysipelas organism was however, soon challenged on morphological, cultural, and experimental grounds by Widal,[33] E. Fränkel,[34] Petruschky,[35] Marmorek,[36] W. Bulloch,[37] and others. Not only did Petruschky show that human erysipelas could be produced by inoculating pure cultures from an abscess, but he and others found that an essentially similar disease could be produced by inoculating staphylococci and *Bact. coli* into the skin. Panton and Adams [38] record an instance of an experiment, accidentally performed, in which the same streptococcus introduced into two separate lesions gave rise to local suppuration in one place and typical erysipelas in the other, and Tillmanns [39] refers to an experiment in which deep suppuration was produced in man by the inoculation of a pure culture of erysipelas streptococcus. Even more severe results followed the inoculation of Fehleisen's streptococcus as in the fatal case recorded by Janicke and A. Neisser [40] as well as two fatal cases mentioned by Coley,[41] and there may well have been other such cases which for obvious reasons were not published.

John Hunter once expressed the view that erysipelas was "the result of a peculiar constitution in the patient without which the same irritation would have resulted in common inflammation." We now tend to translate what Hunter called "peculiar constitution" into immunological terms and immunological research might do much to clear up the mystery of the peculiar features of erysipelas. The tendency of erysipelas simplex to clear up within a few days is so closely analogous to the cure of scarlet fever that it may well be associated with the development of immunity to the erythrogenic toxin of the streptococci. Some observers have stated that they have been able to blanch the advancing margin of the erysipelas rash with streptococcal antitoxin, others however have failed. Confusion may have arisen in the choice of clinical material for these experiments. The bright red erysipelas simplex—the St. Anthony's fire of the countryside—would most suggest the effect of the erythrogenic toxin. We could interpret ppears worth while to administer the erythrogenic itoxin to such patients.

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† cf. with a remark of Solly's quoted by Braxton Hicks, (Brit. Med. Jour., 1878, ii., 796). "Whenever a case of surgery in private takes on a highly phlegmonous appearance, I am always sure to find break out in the inmates either erysipelas or scarlatina."

Inadequacy of Theory of Specificity.

The haphazard sequences and relationships which iave selected from an almost unlimited series, old d new, seem to constitute a *reductio ad absurdum* any specificity view of the hæmolytic strepto- cci and the common human diseases with which ey are related. It is as impossible to separate e several clinical and epidemiological forms of eptococcal disease as it is to distinguish specifically e streptococci found in connexion with them. ie attitude of the physician when faced with the tual practical clinical and epidemiological problems these diseases must largely depend upon the view takes on this matter, and one or other view he ust take as a working hypothesis and as a scheme r holding together the large number of facts which e available on the subject of the hæmolytic strepto- occi and the diseases associated with them. The nitarian view is consonant with the admitted ilure of the bacteriologist to subclassify the group. is in consonance with the curious sequences of ropagation which may be observed in streptococcal isease. It does something to explain the mysterious irth of streptococcal epidemics and the failure f hospital and other forms of isolation to control he incidence of scarlet fever.[54] It permits a escription of the hæmolytic streptococci daily met ith in disease under one name, and it calls a truce o what Topley and Wilson call the "riot of hristening" which has brought so much confusion nto the study of this group. In designating a ommon toxin throughout the group and defining he clinical effects of that toxin it indicates both he value and the limitations of antitoxin treatment nd finally it discourages the use of sera the only pecific thing about which is their label.

Decline of Streptococcal Infection.

Anyone who has traced the history of the streptococcal diseases from the first adequate records of the eighteenth century to the present day must needs be struck by the gradual decline in severity of epidemics which seems to have begun in the days of Lister and the pioneers of bacteriology and still goes on. In the war of attrition between streptococci and the human race civilised man seems to be gradually emerging as the victor. This is not, I think, because the human race has become less susceptible, nor because any dramatic methods of dealing specifically with streptococcal disease have been forthcoming, but rather because the small obstacles set in the way of epidemic spread have slowly but surely had the hoped-for effect, possibly by placing some control on the passage and exaltation of the infecting agent. The individual source of infection in streptococcal disease only too often eludes us and is likely to continue to do so, but we no longer expect to see the terrifying fatality of puerperal fever, wound infection, erysipelas, and malignant scarlet fever which was familiar in by-gone days. Some "accessible link"—to use Topley's expression—in the propagation of streptococcal disease seems to have been reached if only by our ill-guided gropings. For fifty years this country has been nearly free from the dreaded scarlet fever which a century ago decimated townships and exterminated families.[55] Fifty years is a long interval in an epidemic periodicity and we may reasonably hope that the old type of epidemic has disappeared never to return, a consummation perhaps of all the hygienic measures, separately inconsiderable, that have gone to make up modern preventive medicine.

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NORTH MIDDLESEX COUNTY HOSPITAL.—In his report of the work of this hospital for the nine months ended Dec. 31st, 1930, Lieut.-Colonel Spencer Mort, the medical superintendent, states that the total admissions, including 862 births, were 8216. There were 22,650 out-patients not including pensioners. The number of deaths was 1077, but more than 10 per cent. of these patients died within 48 hours of admission and 53 per cent. were over 60 years of age. "The death-rate, therefore, conveys no exact expression of the utility of the hospital *as a whole*," *Colonel Mort* says, "but presents partly the conclusion of cases from other hospitals, whose statistics benefit at our expense." The mental wards are condemned as unsuitable.

recently by Caiger,[48] who stated that in his own experience of cases in which the rash appeared within four days of parturition the mortality was over 70 per cent., puerperal septicæmia usually supervening. Braxton Hicks in 1868 stated that in his own practice "about three-fourths of the puerperal fever he saw was somehow mixed up *with scarlet fever*," and in the Transactions of the Obstetrical Society of 1871[49] he gives an excellent account of his views as to the relationship between the puerperal fevers, recording many cases illustrating my present theme. Andrewes and Gordon[50] in their paper report what they describe as a puzzling series of cases in which a scarlet fever case appeared to generate not only other cases of scarlet fever but also a fatal case of puerperal fever which in turn generated scarlet fever in the nurse who was attending her. On the other hand two such well-known authorities as Goodall[51] and Ker[52] express the opinion that scarlet fever usually runs a mild and typical course in puerperal women. Goodall, however, admits that in many instances of puerperal septicæmia the only traceable source of infection has been cases of scarlet fever, and Ker records one case of a woman dying as the result of both puerperal infection and scarlatina anginosa. It appears then that, although the present mild variety of scarlet fever is not necessarily dangerous to the parturient woman, streptococci derived from scarlet fever may at times produce the severest puerperal fever and that this risk was greater in those days when scarlet fever epidemics were more definitely pyogenic in character.

There seems little doubt that there are two conditions occurring in the puerperium which may be diagnosed as scarlet fever, the one an ordinary scarlet fever due to primary faucial infection, and the other due to primary infection of the uterus itself with a streptococcus of high toxigenic power. The latter merges into other forms of puerperal fever from which it can only be separated by its severity.

Hypothetical Scheme for Streptococcal Diseases.

—	Toxigenicity of strepto-cocci in vivo.	Susceptibility of patient judged by Dick test.	Primary site of infection.
Scarlet fever ..	+ +	+	Throat.
Acute pharyngitis = S.F. sine eruptione	+ +	–	,,
Acute pharyngitis ..	±	+ or –	,,
Puerperal fever and rash = puerperal S.F.	+ +	+	Uterus.
Puerperal fever ..	+ +	–	,,
Puerperal fever ..	±	+ or –	,,
Erysipelas and bright rash	+	+	Skin.
Erysipelas. No bright rash	{ + ±	– + or –	,,
Cellulitis and pink lymphatics ..	+	+	Cellular tissue.
Cellulitis; no pink lymphatics ..	{ + ±	– + or –	,,
Surgical scarlet fever	+ +	+	Large surfaces; (little invasion, profuse growth).

I have put out in a rough scheme (see Table) what I conceive to be the various clinical, pathological, and immunological entities of streptococcal origin which are met with during the puerperium and I have extended the scheme to cover other streptococcal entities. The first column indicates the presence of erythrogenic toxæmia in the clinical aspect of the disease. The sign ± in this column merely expresses that while there may be some clinical signs suggesting specific toxæmia, this is not *in most cases of the disease in question* a prominent feature, not enough at any rate to give rise to a definite rash. It will be seen that three immunologically separate conditions are to be considered under the name of puerperal fever quite apart from simple scarlet fever (1) a condition in Dick-positive women in which generalised rash is present and which may be considered as scarlet fever due to infection of the uterus with a highly toxigenic strain; and conditions without rash (2) those in either Dick-negative or positive women where the streptococcus in the uterus is not sufficiently toxigenic to produce rash; and (3) those in Dick-negative women in which, though the toxigenicity of the streptococcus in the uterus is marked, there is sufficient circulatory antitoxin present to prevent the rash and other manifestations of the erythrogenic toxin. In any or all of these conditions septicæmia may occur and dominate the clinical picture.

STREPTOCOCCAL WOUNDS.

It would not be in my province or competence to attempt to describe the protean surgical diseases due to the infection of wounds with hæmolytic streptococci. I have already discussed two special manifestations of wound infection, surgical scarlet fever and erysipelas, but apart from these much material could be quoted in support of a unitarian hypothesis of the causation of streptococcal disease. It was long ago noted by surgeons that a gentle pressure on the course of one of the pink lymphatics which are seen in cases of streptococcal wounds would prevent the proximal spread of the redness and it was recognised that this could not be due to blocking the advance of living bacteria. Some years ago[53] I pointed out that a similar radiation of pink lymphatic vessels spread from the site of an intradermic injection of a sufficient dose of the erythrogenic toxin of a scarlatinal strain and the observation has since been frequently confirmed. It would seem then that the reddening of the lymphatics so characteristic of streptococcal wound infection is produced by the same toxin as produces the rash of scarlet fever. Streptococcal lymphangitis can thus be looked upon as a kind of "miniature" surgical scarlet fever. The toxin removed by the lymphatics presumably reaches the general circulation and probably adds its quantum to the misfortunes of the patient. Not uncommonly a more or less generalised scarlatiniform rash occurs in such cases. Erysipelas may develop at the edges of the wound and septicæmia may follow the inward spread of the infection. Thus even such a *simple* form of streptococcal disease as an infected wound illustrates streptococcal potentialities that can only be simply explained by the unitarian hypothesis. We lack the immunological data which might help to widen our knowledge of wound infection. I know of no observations correlating the Dick test with the occurrence of "lymphangitis" of the peculiar streptococcal type. John Hunter thought that the condition depended upon the "constitution" of the patient and it may well be that only those develop "pink lymphatics" who are positive to the Dick test. At least in the absence of more precise knowledge mation of differences in clinical results with long short times of exposure? I think it must be tted that while it is quite possible to invoke aspect of cell activity as a rational explanation hat is happening, there are other important bilities. For this reason it may be well if we nise that while these studies on the particular es of activity in the cell are fundamental in acter, they are not necessarily, though they may he key to the position as regards cell reactions adiation.

few words may be said about other ways in h these clinical differences can be visualised. ving cell represents a vast complex which is ehow in equilibrium, and the various equilibria maintained in spite of an extraordinary number actors which are always tending to upset them ne way or another. These equilibria differ from equilibria considered in physics, because they are ble of adjustment over such a very wide range ction. The whole organisation of the cell, being nally adapted to the processes of repair, growth, tiplication, and so on, can cope with forces whose ons on many inert media quickly upset the nal conditions of equilibrium, but in the case of cell they do not do so unless certain limits are hed. For instance, practically any normal organ he body can stand some dose of X rays without ng any recognisable reaction, no skin reaction, epilation, no blistering, no sterilisation, &c., and in itself argues that the processes set up in the by radiation can be supported within certain ts. Now without doubt, when X rays and gamma s are absorbed by the tissues, the initial process is liberation of electrons in situ and the main effect duced by these electrons, when they in turn are orbed by the immediate tissues, is to produce condition known as ionisation; but it should recognised that this ionisation is only likely to important when it happens to certain classes of mical bodies. The ordinary electrolytes of the ly will not be affected; colloids, yes, if posi- ely charged, not if negatively charged, and hough some processes of oxidation may be iated, those of reduction appear to be almost likely, according to recent work by Colwell.[*]

There is, however, one class of bodies playing an portant part in cell processes—namely, intracellular ymes—which appear to be influenced by radiation an extent which must be taken into account here. may prove to be a significant fact that the curves strating the rate of destruction by radiation of tain simple forms of vegetable and animal cells, d of enzymes, are so similar in their general aracteristics. It may, of course, be found that this only a similarity with no causative link between em. Enzymes play an important rôle in cell life. d one aspect of their activity is shown in recent rk by Chambers and Scott. If, for instance, an planted tumour of J.R.S. be removed from a rat, inced up and incubated with saline for various riods of time, a cellular extract from it seems dowed with two properties when used. If the riod of incubation is long, and this extract is injected to rats, the animals are made more sensitive to oculations of tumour cells; if the period of incuba- on is short, say less than two hours, the extract s the property of making rats immune to a certain tent.

The bearing of such observations on the subject this paper may now be discussed. The whole question of immunity towards implantations of cancer in animals is a very big one and a very much disputed one, yet there are many who will agree that if you can protect an animal against an inoculation of cancer cells towards which it is normally susceptible, you have gone some way in a therapeutic problem. Now if irradiation of a tumour is followed by its disappearance, and if in the act of disappearance (autolysis or disintegration) substances may be formed which have the potentiality of either making the organism more susceptible or, on the other hand, making it immune to tumour growth, then it might be inferred that the disappearance of tumours in the body may either be followed by conditions of increased susceptibility or immunity in the body of the host. Experimentally the condition of necrosis is one in which cellular extracts can be obtained which produce conditions of increased susceptibility to tumour growth; and necrosis of the tissues is one of the danger signals in radiotherapy. It may be too early to apply this principle in therapeutics, but it may well be that some of these obscure kinds of reaction *going on in the body have more to do with the essential* actions of radiation than can yet positively be claimed for them.

Theories of Indirect Action.

Any effects of radiation upon the body other than the direct effect on the malignant cells are included in the term indirect action. It may be useful to divide the subject into three sections: (1) normal structures, contiguous to the malignant growth; (2) the circulatory system; and (3) the portions of the body remote from the growth. Dominici was perhaps the first to point out the importance of the part played by the normal cells in the vicinity of a malignant growth after gamma irradiation. He was able to show that in the course of several days after a dose of radiation there was an accumulation of plasma cells and lymphocytes in the stroma, and that these invading cells had a great deal to do with the subsequent disappearance of the growth. Experimental studies in immune and irradiated rats support the view that local cellular processes play a sane part in deciding the trend of events, though the immune condition is general.

With regard to the circulatory system, an enormous amount of work has been done showing the effects of X and gamma rays upon the blood stream in man and in a large variety of animals. This action has been shown to be largely a destructive one, although not entirely so. Large doses to the body cause a diminution in most of the cells, especially the lymphocytes, extending indeed to a destructive action upon the marrow which, if great enough, leads to death. This so-called destructive action of the radiation upon the blood does not necessarily mean that when cells are withdrawn from the circulation they are destroyed; in some cases no doubt they are, but it is an experimental fact that when the lymphocytes are withdrawn from the circulation of a rat by exposure to a small dose of X rays they return to their original numbers in a very short time. As this process can quickly be repeated, it is perhaps more rational to conclude that it is not a case of destruction but of temporary withdrawal from the circulation. The effect of repeated small doses of radiation upon the body has not been systematically carried out in man, and only to a limited extent in animals; but as far as the experiments go they show that the number of white cells in the circulation can be substantially increased. The effect of X rays and gamma rays on the capillaries should be

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[*] Received for publication.—Ed. L.

NATURE OF THE ACTION OF RADIUM AND X RAYS UPON MALIGNANT GROWTHS.

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IN the course of the development of radiotherapy (radium and X rays) opinions have from time to time been advanced as to the nature of the *action* which the rays have upon malignant growths. Suppose, for the purpose of the argument, that the *effect* is the disappearance of these growths, then the question is, what action or series of actions is set up by the radiation which leads to this?

In the first instance opinion naturally inclined to the view that the rays had a direct effect upon the malignant cells, and that this action was in itself quite enough to account for their disappearance. Experimentally it is not a difficult matter to show that X rays or gamma rays in doses such as are commonly used clinically have a direct action upon malignant cells; this is most easily shown by excising animal tumours, exposing the tissue to measured doses of the rays, and then implanting small pieces of it into susceptible animals. The effect of big doses is to prevent the growth of the implantations, and doses smaller than this give rise to a delayed onset or diminished rate of growth, so that a whole range of direct effects is apparent by merely varying the dose of radiation. For a long time, therefore, attention was focused upon what kind of direct action would most probably be induced by the rays, and in consequence a number of suggestions arose about what parts of the cell were most sensitive to radiation. First one chemical component of the cell was suggested, then another, but it cannot be said that the attempt to attribute the change to any particular chemical substance has met with any success or had any constructive value in helping us to visualise the essentials of the processes initiated by radiation.

While these ideas were being developed it was suggested that perhaps after all the action of radiation upon malignant growths might be an indirect one, and that it was not so much what the rays did to the malignant cells as what they did to the normal contiguous structures and to the organism as a whole that brought about the end-result. There was a certain amount of clinical and experimental support for these views, for patients had been given moderate, in fact quite small doses of X rays, certainly not lethal ones, over prolonged periods and had gained benefit from them. There were few records of what might be called disastrous results with this form of treatment. Soon after the adoption of the Erlangen method of giving large doses at a single sitting to patients suffering from malignant disease, there was evidence that these doses could not be given with impunity, and in many cases caused fatal results. From the experimental side there is abundant evidence that heavy doses of X rays or gamma rays are very damaging to the normal tissues and cells of the animal body, but an extraordinary range of vulnerability exists among the tissues, some being very sensitive, others very resistant. On the other hand, experimental evidence has been brought forward to show that small doses of X rays judiciously given appear to help the organism to combat the growth of cancer. For instance, if a small region of the rat's body be X rayed, and the animal is afterwards inoculated with sarcoma cells, these cells proliferate more freely in the non-rayed than in the X rayed tissues; again if the whole rat be given repeated small doses of X rays and sarcoma cells are then implanted they do not grow as rapidly as in the normal untreated animals.

Altogether the evidence seems to show that the action of these rays is partly a direct one and partly an indirect one, and it remains to discuss the nature of these two actions.

Theories of Direct Action.

One of the most significant clinical facts in connexion with radiotherapy is that the effect of a given dose of radiation upon a malignant growth depends upon the time interval over which the dose is spread. This is perhaps shown most strikingly in radium therapy in the treatment of primary growths of the tongue. When these localised growths were treated years ago by the insertion of a few radium tubes of a high intensity for a relatively short time the results were bad. Now, by the use of a larger number of low intensity needles, and prolonging the exposures for seven to ten days, the results are good—so good in fact that, at many clinics, experienced radium therapists will express little doubt about being able to treat a primary lesion in the tongue successfully. It should be borne in mind here that some of the improvement in the results is due to a more even distribution of the radiation. Again, an example may be quoted in the case of X rays. It is probably true to say that the method of Coutard, at the Radium Institute in Paris, of treating malignant glands in the neck by means of repeated small doses of X rays prolonged over a period of several weeks, is better, judging from the results, than the method of administering large doses to such regions in a comparatively short time.

It would be quite unwarranted, from two such groups of cases, to jump to the conclusion that the whole of the *practice of radiotherapy* has to be recast on the lines of small intensities and long times of exposure, for some of the work at the Memorial Hospital, New York, shows the possibilities of treatment with high concentrations of radium for relatively very short times. But the two cases which have been cited do lead us to look afresh at the position and to inquire what particular actions set up by the radiation are responsible for the wide clinical differences noted.

If time makes all this difference, it is possible tha the life-cycle of the cell is operating in some wa to account for these differences. Quite early i experimental studies it was found that some type of cells were more sensitive to radiation in the dividin stage than in the growth stage. Studies of this kin have been continued intermittently and develope notably by Spear and Love at the Strangeway Laboratories. This later work has shown that no only are there stages in cell life which do diffe enormously in their sensitiveness towards a dos of radiation, but that the premitotic stage is particularly sensitive phase in its life, and th inhibitory action of radiation upon growth ca perhaps to a large extent be interpreted as bein due to the prevention of the cell entering the mitoti phase.

Given these facts in a general way, are we entitle to go further and say that they provide a rationa tes this by saying, 'Us used to walk in our sleep, the nurse said, but us didn't know about it'), d she thought the nurses and people were talking ainst her and that she had seen strange faces in ward." It was in consequence of this that she s readmitted to the Devon Mental Hospital on pt. 9th, 1931.

Since her readmission she has been well-behaved d, under careful supervision, has made herself eful in the ward. The "choreiform twitching ovements" are no longer observable, but she has ffered from occasional epileptiform fits in which e bites her lips but not her tongue. She has no aura," nor has she any recollection of her fits, as e is confused for some time afterwards. She does t injure herself in falling, nor does she lose control her sphincters. The sister of the ward reports at the fits are very violent. A bromide mixture as prescribed, and she has had no fits since ct. 30th.

She is periodically depressed, easily upset, and uickly "pulls a long face"; indeed, the rapidity f her *emotional changes remind one of the* disseminated sclerotic or of the encephalitic; but etween-times she takes an interest in things generally nd is cheerful enough when talking to the doctors nd nurses. Though her speech has a tendency to luggishness, and she refers to herself as "us" an expression common to the Devon dialect), here is now no evidence of any speech difficulty, and she answers questions quite readily and ationally.

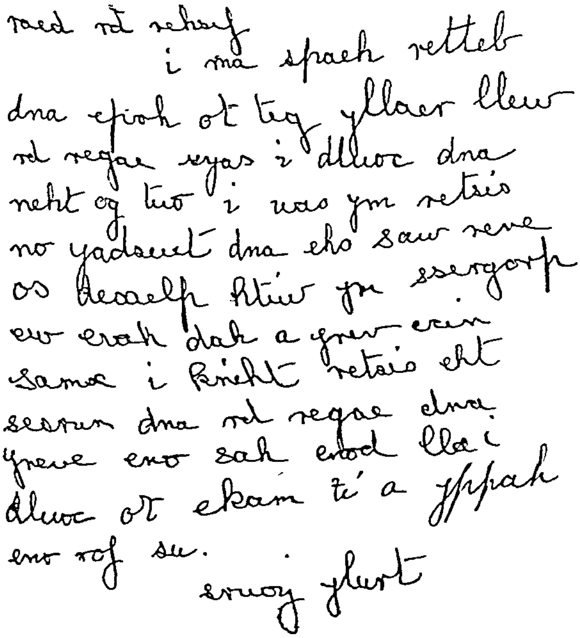
The measurement of any adult's intelligence bristles with difficulties. Nevertheless, we thought hat by putting to her a modified series of Binet-Simon tests (adapted for children up to 16 years), a rough estimate of her intelligence might be formed. She came through the final 16-year examination with flying colours, except for the arithmetical reasoning tests (which are in the 14-year examination); these were very poorly performed. Memory and comprehension tests were very good. Information gained from these intelligence tests, in conjunction with observations on more general lines, indicate that she has an intelligence quotient between 70 and 80 or possibly even between 80 and 90. Classified thus, she would be regarded as a dull or "backward" case. Her backwardness is doubtless chiefly due to her lack of maternal care and poor educational facilities. She "prefers girls' school stories" to the newspapers, which she does not read.

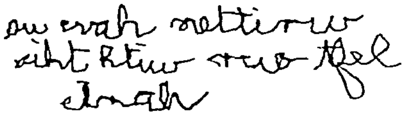
Physical examination revealed no definite abnormality. Her general health is satisfactory, save that she was pale and obviously anæmic on admission; she bas since gained 10 lb. in weight. Her pupils are large, and react well to light and *on* accommodation. She has always worn glasses, and Dr. G. P. Hawker, the consulting ophthalmic surgeon to the Devon Mental Hospital, who saw her before her discharge in 1924, prescribed lenses to correct a −3·5 astigmatism. He has again examined her since her re-admission, and confirms that these are still what she needs. Her deep reflexes are brisk; her knee-jerk gives a sustained reaction of the choreic type. Tests for asynergia reveal a marked incoördination *with the finger-nose test*, particularly when she performed it with the right hand. When, however, she opened her eyes she was able to perform the test without error. She complains of "an irritating tickling" in the ears, giddiness in which the world starts swimming round so that she has to sit down, and of headaches, "right on top of the head, first stabbing, then dull."

READING, WRITING, AND DRAWING.

The real interest of this case revolves round her unusual manner of reading, writing, and drawing. She writes each word backwards, starting on the customary side of the paper—i.e., to the left—and using her right hand (Fig. 1). Each letter symbol, however, is correctly orientated. With her left hand she writes in exactly the same manner, though with less facility, thus:—

FIG. 1.

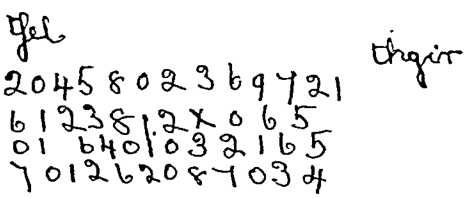

raed rd rehsif
i ma spaeh retteb
dna epoh ot teg yllaer llew
rd regae syas i dluoc dna
neht og tuo i was ym retsis
no yadseut dna ehs saw reve
os desaelp htiw ym ssergorp.
ew evah dah a yrev ecin
samx i kniht retsis eht
sesrun dna rd regae dna
yreve eno sah enod lla i
dluoc ot ekam ti a yppah
eno rof su.
sruoy ylurt


su evah nettirw
siht htiw ruo tfel
dnah

She informs us that she has never been left-handed. Her sister writes normally. The presence or absence of the patient's spectacles does not affect the issue. Her figures are correctly orientated, but, when she is asked to copy a row of numbers she will write them backwards, starting, as for the writing of words, on the correct side of the paper. When asked to copy the following figures,

```
        Left                  Right
  1 2 7 9 6 3 2 0 8 5 4 0 2
      5 6 0 X 2 1 8 3 2 1 6
  5 6 1 2 3 0 1 0 4 6 1 0
  4 3 0 7 8 0 2 6 2 1 0 7
```

this is what she produced:—


tfel thgir
2 0 4 5 8 0 2 3 6 9 7 2 1
6 1 2 3 8 1 2 X 0 6 5
0 1 6 4 0 1 0 3 2 1 6 5
7 0 1 2 6 2 0 8 7 0 3 4

She adds and multiplies in an extraordinary manner (Fig. 2). Thus when requested to add together $\frac{253}{179}$ she turned the paper round and wrote

Ɩㄥ6
Ɛϛᄅ
32121.

Apart from the reversal, this method of addition bears a resemblance to the practice of the aphasic. After adding together two figures which amount mentioned—the treatment of capillary nævi proceeds on the lines of repeated small doses, the ultimate effect being the obliteration of the capillaries.

For our purpose here we may, in the circulatory system, include the function of the blood stream in dealing with bacterial infections. It is the usual practice in the radiological treatment of infected growths to attempt to clear up the infection as far as possible before any irradiation is carried out, otherwise there may be a flare up and rapid death from sepsis. Experimentally it has been shown that heavy doses of X rays to an animal can markedly lower its resistance to bacteria. If, for instance, the abdomen of a cat be given a heavy dose of X rays, all the rest of the animal being protected from the rays, death may ensue in a week with an acute infection of the lungs. It is unthinkable that the function of the blood stream is not of prime importance in the reaction of many malignant growths towards big doses of X rays or gamma rays.

Finally, the indirect action of radiation upon malignant growths must include the action the rays have upon the general physiological functions of the body. Here is a field practically unworked over by physiologists. We are, without doubt, more ignorant of the general physiological effects of X rays and gamma rays than we are of their immediate effects upon cell life, whether malignant or otherwise. It is an encouraging sign that physiologists are now including radiation as an instrument for their use, which may prove not only of direct benefit in purely physiological studies, but which will in turn yield results having an important bearing on radiotherapy.

Conclusion.

The foregoing remarks inevitably bring with them the question as to whether there is any method by which we can indicate which of the many actions produced by the rays are really the most significant. While all these actions are extremely interesting subjects of study, it is a vital matter to know which of them are of primary and which of secondary importance.

One method of approach to the question is to try to correlate the various effects with the doses of radiation which produce them. How wide a range of dose-effect exists, even among the few examples mentioned, may be seen as follows: If we call L the lethal dose—i.e., the dose of X rays or gamma rays which if given to a layer of tumour cells just prevents their growth—then one-tenth of this dose causes an easily recognised reduction in the number of cells in mitosis. Now turn to the action of X rays on colloids; Crowther has shown that the positive colloids may be precipitated by X rays, but the doses required to do this are relatively enormous, about 20 L. Another contrast could be provided by the following: A dose of X rays equal to L/10 would be quite enough if given to a rat to rid the blood stream of more than 90 per cent. of its lymphocytes, yet 20 times this dose could be given without being able to convert 1 per cent. of sugar into dextrin.

If we attempt to evaluate the various actions of these radiations, bearing in mind their order of appearance in the scale of quantity—how some of the vital functions of living tissues are put out of action by a quantity of radiation which has but a trifling action upon their other processes—perhaps the most important classes of action are:—

(1) Those which interfere with or disorganise the delicate processes involved in the division and maturing of cells.

(2) Those which determine the release into the tissues and into the circulation of the products of cells, normal as well as malignant, whose destruction is caused by the rays.

(3) Those which produce changes not only in the content and production of the blood, but also in its power of dealing with infection.

A CASE OF PSEUDO-MIRROR-WRITING

AND SOME OBSERVATIONS.

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AND

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THE exceptional interest of this case, and the fact that we can find no recorded parallel, has encouraged us to give a detailed account of our investigations. That the understanding of abnormalities of writing and drawing has progressed so slowly may perhaps be ascribed to the fact that similar cases have, in the past, been inadequately recorded.

The patient was a domestic servant, 28 years old. She had been admitted at the age of four to the children's home of a workhouse. There she had remained until 14 years of age, when she left to live with a relative. Soon after this (about 1918) she entered the Royal Devon and Exeter Hospital for the treatment of chorea. On July 12th, 1923, she was admitted to the Devon Mental Hospital suffering from "choreiform twitching movements," and was classified as a congenital mental defective. There were no fits, nor did she then show any peculiarity of writing. She was discharged on Sept. 2nd, 1924, and went into service. After a while, however, she had to leave the situation because "shakiness of her hands" caused her to drop trays, teacups, &c.

About four weeks after her discharge, while staying with a friend, she was "taken ill" and she remembered nothing more until she woke up next morning to find herself in bed in her friend's house. This illness seems to have been in the nature of a "fit." She was admitted on Feb. 26th, 1926, to a local infirmary in such condition that—to quote her own words—"she couldn't think, speak, or write, but she could hear what people said to her." Her memory was also defective. She "tried hard to speak, but couldn't get any words out"; a little later, she wrote her wants on a slate, but at first the nurses failed to understand her writing. This seems to be the time when the pseudo-mirror-writing took its origin. It was not long, however, before the nurses tumbled to the meaning. During her stay here, her speech would return at intervals, but never for more than a few days or so at a time. Four months before she left she had a "shock," which brought her speech back and, in her own words, "it never left her again."

In May, 1930, the guardians sent her to an epileptic colony, from whence she went back to an infirmary. Whilst there it is reported that "she attempted to throw herself out of the window and to strangle herself; she wandered about at night (she substanrmed the corresponding letters in their correct rientation : A, B, C, D . . . &c.

MIRROR-WRITING AND SIMILAR ABNORMALITIES.

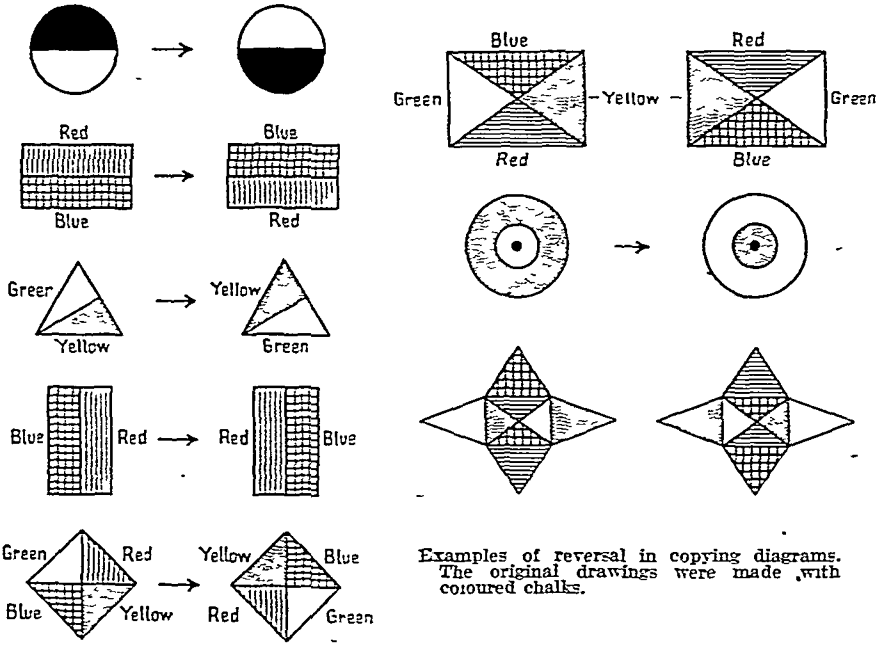
Three salient points emerge: Firstly, that the writing is not true mirror-writing; it is backward writing, with the letters correctly orientated, and written with the right hand in dextrad fashion, from left to right of the paper. This pseudo-mirror-writing, as we have christened it, is unintelligible when reflected in a mirror, save for an isolated word here and there. Secondly, it is associated with upside-down reading and drawing and backward spelling. Thirdly, the pseudo-mirror-writing —and doubtless the associated phenomena—began after the "illness" recorded in the case-history, and that, also about that time, the "choreiform twitching movements" departed and were replaced by frank "fits."

We make no apology for the term pseudo-mirror-writing, although it is in the strict sense an inexactitude, because at first sight the script does indeed suggest mirror-writing, and because the affinity of title does bring out, upon examination, certain common relationships between two distinct phenomena. For the benefit of those who have not made a special study of mirror-writing ("Spiegelschrift"), it would be well to explain that the designation is generally applied to that form of writing which is executed from right to left, with the letters reversed and so arranged that when reflected in a mirror they look like ordinary writing. It is worthy of note that a large number of observers have associated mirror-writing with left-handedness and "eyedness" (Brennan).

Most commonly true mirror-writing is executed with the left hand, either because there is a natural left-handedness (Blom believes that mirror-writing is as normal for left-handed people as conventional writing is for the right-handed) or because some disability of the right hand tends to it. The majority of cases of mirror-writing so far recorded have been observed to follow right-sided hemiplegia. In such cases we can most happily apply the motor hypothesis of Erlenmeyer or other hypotheses based primarily upon bilateral representation in the cerebral cortices. Whilst most common in cases of hemiplegia, true mirror-writing has been observed in a variety of nervous disorders ranging from locomotor ataxia to hysteria. It has occurred under hypnosis and in cases of automatism. Sundry instances of idiots and imbeciles so affected have been recorded. Women are more subject to the condition than men, and it is said to be easily acquired by highly nervous people. Downey states that sometimes the tendency towards mirror-writing remains latent, as it were, far into adult life, only to manifest itself during states of exceptional fatigue; and it seems that this might reasonably include "psychic shock," which, from the history, seems to appertain to our case.

Sweeney, Hale and Kuh, and Pendred have advanced visual hypotheses to explain mirror-writing, and we think that a similar hypothesis, suitably modified, offers the best explanation of the phenomena noted in our case. We know that objects of the outside world are projected upon the retina as an inverted image, which remains inverted in the visual cortex. Putnam showed that the upper and lower halves of the retina are represented respectively in the upper and lower lips of the calcarine fissure. The re-inversion of the image and its correct interpretation, probably a function of the visuo-psychic centre, is a "learned process" which, according to the evidence that has accumulated, is rapid and takes place very early in life before the child is able to tell others of its difficulties. Tactile and kinæsthetic impressions associate themselves with the visual impressions in this process of learning.

FIG. 4.



Examples of reversal in copying diagrams. The original drawings were made with coloured chalks.

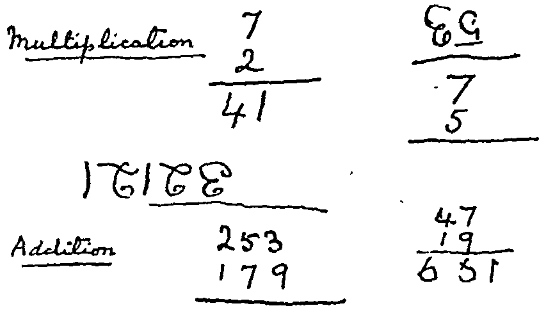
Stern draws attention to inverted drawings of children, and indicates that the very young child is able to recognise a picture upside-down as readily as one right side up. With growth, this ability disappears. Pearson has reported two interesting cases of inverted drawings in children, for which he advances a visual hypothesis. Stratton's well-known experiment showed that erect vision was just a matter of integrating visual data with other sense data and with bodily movement.

The visual theory that is applied to cases of true mirror-writing supposes that vertical relationships are the easiest to rectify, but that there is confusion in the horizontal plane. Thus in the mirror-writer there would be a defective psychological adjustment of the inverted brain image in the lateral plane, whereas vertical relationships would be normally corrected. Orton goes further and suggests that the visual image impinging upon one occipital lobe is the mirrored opposite of the image in the other hemisphere. In the normal subject one of these images becomes suppressed while the other, belonging to the dominant hemisphere, persists. It is suggested that in the mirror-writer supremacy of one hemisphere does not occur, hence there results a constant state to more than ten, it is a common fault with all forms of disordered speech to write down the total sum instead of carrying over one to the next column (Head, vol. ii., p. 333). Thus

$$\begin{array}{r}864\\256\\\hline 10120\end{array}$$

She cannot read ordinary dextrad writing until she has turned it round ("clockwise") and held it upside down. On testing her with different modes of writing it was found that she quite easily read pseudo-mirror-writing, but that she could not read true mirror-writing or inverted writing. When it was pointed out to her that she read and wrote in a strange manner, she insisted stubbornly that: "It is right," or "Us writes proper, don't us." Upon being shown a calendar on the wall she said that the figures were "all right," but that she could not make out the name of the month. When we reversed it the month became intelligible to her, but the figures were "all wrong." The same happened with a time-table. She turned it round "clockwise" to find the names of the stations, but could not then read the time of arrival of the trains. In church she holds her prayer-book upside-down. It has also been observed that when this patient has been tidying up the sister's room, the vases and photos have been put back upon the mantelshelf upside-down, and the pictures and calendars reversed upon the walls.

FIG. 2.



Showing two methods of multiplication and two methods of addition employed by the patient.

This devotion to object-reversal manifests itself in her drawings. In sketching objects from nature, such as a man, a dog, a flower pot (Fig. 3), she draws upside-down when the paper is laid flat before her on the table, but when the paper lies vertical, in front of and parallel with the object, she draws normally. When copying a drawn object that has some definite meaning to her or representing an object with which she is familiar, she will reverse the drawing before attempting to sketch. Then, of course, while the object will actually be upside down, she will draw it the right way up. If, however, what she is asked to copy is a diagram or something which conveys nothing to her so far as orientation is concerned, for instance, a triangle, she does not reverse the paper but copies it upside-down. Colour is affected in the reversal both in the vertical and horizontal relationships (Fig. 4). Her colour appreciation is normal, for she gives correct answers to colour tests. When a sea-painting was shown her, and she was asked which side the lighthouse was, she turned the picture on its head and then said, "On the right." Actually the lighthouse was to her left. Further, when asked to point to the funnels of the ship, which were now upside-down, she indicated a corresponding part of the sea on the top of the picture.

Upon being questioned as to which was the examiner's left hand and her left hand, she made correct answers ("she knew it was her left because she wrote with her other hand"), but when told to look in a mirror and then say which was her left, she invariably mistook her right for her left.

Additional tests were devised to investigate more thoroughly her sense of "spatial appreciation." Two pens, one red, the other yellow, were held one above the other against the wall at a little distance from her. The red pen was above the yellow one, and the question put to her was, "Which colour is on top?" Her answer was: "Yellow." Then the same two pens were held side by side and she was asked which pen was to the left, and she answered that the red was on the left. Actually, the red pen was to the right of the yellow one.

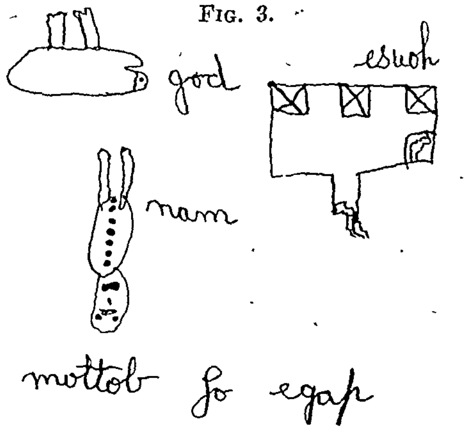
More enlightening were the following tests. The pens were held against the wall cross-wise, the yellow pen a foot in front of the red one. To the inquiry, "Which pen was nearest to her?" she replied: "The red one." Then she was told to feel and see. When she had felt for herself and her mistake was in this way brought home to her she looked bewildered and exclaimed: "Why! the yellow one is nearest!"

A still further test showed the faulty spatial appreciation even more strikingly. One of the pens was held a few feet before her eyes and she was asked, "Was the nib upwards towards the ceiling or downwards towards the floor?" Actually the nib pointed to the floor. Her reply was that the nib pointed upwards, and when she was asked to touch it, expecting to feel the point and encountering only the blunt end, she looked flabbergasted. This test was performed several times, and it was then discovered that she was not in error uniformly but only occasionally. She was asked whether she really saw the pen with the nib pointing to the ceiling, and she said that it had seemed so until she had felt for herself and realised her mistake.

The last two tests are to our mind specially significant in the analysis of her case, showing as they do the discrepancy between her visual and tactile senses.

Her method of spelling is interesting. When requested to spell policeman, she spelt N-A-M-E-C-I-L-O-P; for handkerchief she said F-E-I-H-C-R-E-K-N-E-H; and for California, A-I-N-R-O-F-I-L-A-C—all said quite rapidly, very nearly as quickly as one could spell them forwards. When asked what "Devon" spelt she said, after thinking, "I don't know, sir." Asked what N-O-V-E-D spelt, she said "Devon" at once. Similarly, when asked what Exminster spelt, she looked blank, but when asked "What does R-E-T-S-N-I-M-X-E spell?" (spelling it quite quickly) she said at once—"Exminster."

FIG. 3.



She repeated the alphabet from A to Z in the ordinary manner, though not without making several mistakes in the arrangement of the letters. On being handed cardboard squares corresponding to the letters of the alphabet to arrange in their proper order, this is what she produced:—

Z X Y J W V Q O P S T M N L R U G F K I H E D C B A

When asked to reproduce this effort in writing she y drug intoxication, by fatigue, or by psychic shock, e more highly integrated responses may be thrown t of action and historically simple forms may appear. The general effect of a specific language sturbance is to throw the patient back upon earlier quired and relatively less complex modes of dealing ith the problems that face him, and to limit him a primitive mode of response.

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The question whether the loss of speech was a simple hysterical mutism or in the nature of an aphasia seems to resolve itself in favour of the former —with the added explanations and suggestions that we have offered. In contradistinction to our case, who has made a complete recovery from her mutism, Head states quite definitely that in all cases of aphasia that have shown any progress at all, recovery was incomplete and the characteristic disorder was still present to a minor degree. His observation that his non-traumatic cases of aphasia all "progressed" more or less steadily is not without interest for comparison purposes. Our patient shows no want of comprehension of the significance of words or other symbols, as is the way of aphasics; she simply "distorts" them. Furthermore, the aphasic fails to name objects, and experiences more difficulty in reading numbers than words. None of these features are to be found in our case—on the contrary, she reads numerals more easily than words. The backward writing, in certain respects, marches alongside the actions of mirror-writers during hypnosis and in automatic states, and conceivably even the calligraphic displays of mediums during spiritualistic séances.

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After coming to the above-mentioned conclusions, we felt in duty bound to establish our diagnosis by a trial of hypnotherapy. The patient was consequently put under light hypnosis and, whilst in this state, it was suggested to her that after waking she would write, read, and see everything normally. Before leaving the room she was asked to write the operator's name and address on a slip of paper. This was performed, quite freely and without hesitation, in an ordinary manner. The following morning this letter was received (Fig. 5).

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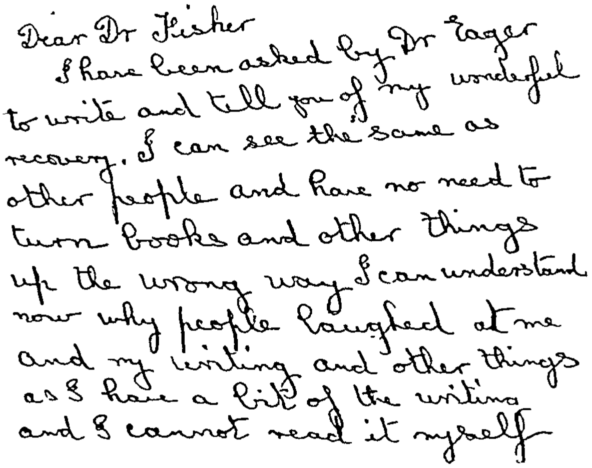
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I have been asked by Dr Eager
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recovery. I can see the same as
other people and have no need to
turn books and other things
up the wrong way I can understand
now why people laughed at me
and my writing and other things
as I have a bit of the writing
and I cannot read it myself

There is no doubt now that the diagnosis has been clinched. The patient has been discharged from the hospital, and so far as we can tell at present a complete cure has been effected. She takes a keen delight in writing numerous letters to her relatives and friends "just to show them how well and happy she is."

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Through the personal observations made by Bayers we are aware of the occurrence of distortions in the field of vision and reversals in spatial orientation as part of the phenomenology of migraine.

THE POSSIBILITY OF HYSTERIA.

A case recorded by Pick introduces the hysterical factor. A woman who suffered from disseminated sclerosis developed a peculiar visual anomaly which was regarded as hysterical. She complained of seeing people inverted with their heads below. During the stage of inverted vision her reading was affected, and she tended to reverse the order of words and letters.

Our case-history and the nature of the fits strongly suggest the possibility of hysteria—a subconscious wish to remain cared for in institutions rather than to work for a living in the cold, exacting world without. A desire to "hold the stage" and to excite wonder and comment might conceivably be at the bottom of the phenomena. It is a theory that must be accorded respect.

On going into the case-history more thoroughly and collecting information from the patient's married sister and the staff of the infirmary where she was, when the writing peculiarity first manifested itself in 1926, the nature of the "shock" which restored her speech was discovered. It was the witnessing of the precipitate birth of a child in the bathroom of her ward. The sister of that particular ward described the patient as seeming to be always "afraid to be left alone" and "afraid of the dark"; and further added that "she was in the habit of getting into bed the wrong way round"—that is to say, with her head under the clothes at the foot of the bed and her feet where her head ought to be.

She has been watched carefully over a sufficiently long period now, and the consistency of her actions and habits of life seem to negative any possibility of malingering.

With a little practice one of us found that he could read quite well from a newspaper or book held upside-down. It was also discovered that her backward writing could be imitated with fair speed and accuracy. What could not be achieved was to spell as she does. The weak-minded, as we are aware, are often surprisingly talented in certain directions, but even so it would require considerable practice—and an order of intelligence above and beyond what we believe her to possess—to acquire the art of spelling backwards long and difficult words, quickly and correctly, in the relatively short time that elapsed between her discharge from this hospital in 1924 and her admission to the infirmary 18 months later.

Pick's work on "Contrary Actions," referring to cases of speech reversal, has suggested that the writing and reading might conceivably be pseudo deliberate, coupled with a certain amount of negativism. But the patient is not a schizophrenic, nor does she show any signs, so far as we can discover, of schizoid trends or tendencies. She is willing and coöperative rather than negativistic.

The word hysteria is such an indefinite and unsatisfactory entity—everything we do not understand is shot into that psychological ashpit of medicine—and rather than be accused of this unoriginality we would, while recognising the essentially hysterical nature of the case, like to be a little more profound, and we would venture to submit that the disorder is one of faulty spatial discrimination, consequent upon some psychical disturbance in the visual cortex. It is conceivable that if there is some dysfunction of the visual cortex—or of the paths linking it up with the motor centres—reading, writing, and drawing, through faulty perceptual processes, might be misrepresented.

Cases are on record where the ability to reinvert the inverted retinal image has been temporarily lost following cerebral disease or injury. A case in point was recorded to Dr. Schweinitz by Dr. Albert Seitz, of Tenn. This was a 20-year-old youth, who suffered a rather severe head injury and for several weeks thereafter saw everything upside-down. This phenomenon disappeared a month later. A similar case was published in the *New York Medical Journal* of Dec. 18th, 1904. Following an attack of measles an 8-year-old boy saw everything upside-down, and as a consequence had considerable difficulty in orientating himself. On closing his eyes, however, the difficulty disappeared.

Weighing up all the circumstances of the case, we believe that our patient is reading, writing, and drawing "primitively"—in other words, she tends to portray an object as she sees it rather than as training would cause her to perceive it. Our view is that the "fit" which occurred after leaving service was the psychic shock that effected the loss of speech and caused the "learned processes," demanding the effectual coördination of important *centres*, to revert to a childish type, and that the subsequent "shock" whilst in the infirmary was sufficient to restore the former but not the latter.

Head's work on the organic aphasias (which might reasonably be expected, in no small measure, to apply to those of an hysterical nature also) is instructive. Anything which disturbs the free use of language will tend to affect the power of reading and writing to a profound degree. "Articulate speech, the oldest acquisition, racially and individually, exhibits the most specific and particular changes, whilst the recently developed powers of reading and writing are more massively and indifferently affected." Head concludes that in disorders in the use of language there is interference with the use of language *as a whole* and, though certain aspects of it may be disturbed more than others, the defects of speech cannot be expressed in simple terms of audition, articulation, vision, and writing. In other words, there is a dissociation of the highest forms of expression of thought—i.e., of symbolic thinking and expression. We learn from a study of his work that if vigilance is lowered, as it may be by structural injury, by disease, drug intoxication, by fatigue, or by psychic shock, e more highly integrated responses may be thrown t of action and historically simple forms may ppear. The general effect of a specific language sturbance is to throw the patient back upon earlier quired and relatively less complex modes of dealing th the problems that face him, and to limit him a primitive mode of response.

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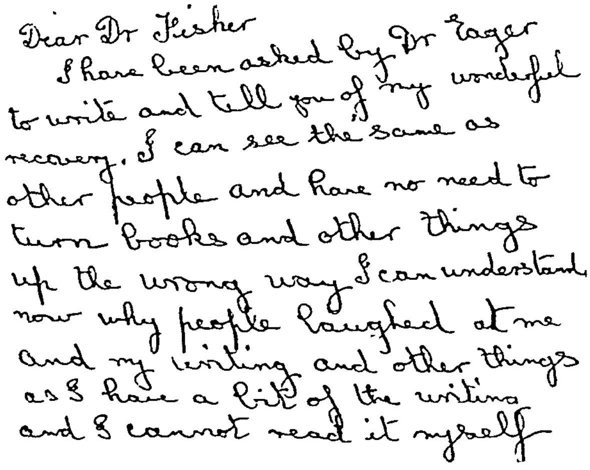

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Another case mentioned by Hotz is interesting. A girl of 10 became unable to read as the result of taking belladonna by the mouth. She could, however, read quite fluently when she turned the book upside-down. At a distance of 20 feet the Snellen's test-type appeared inverted. When her eyes were completely atropinised (unlike our case, who remained unaffected), and also when a +2·50 lens was placed before her eyes, the inverted vision disappeared.

Through the personal observations made by Bayers we are aware of the occurrence of distortions in the field of vision and reversals in spatial orientation as part of the phenomenology of migraine.

THE POSSIBILITY OF HYSTERIA.

A case recorded by Pick introduces the hysterical factor. A woman who suffered from disseminated sclerosis developed a peculiar visual anomaly which was regarded as hysterical. She complained of seeing people inverted with their heads below. During the stage of inverted vision her reading was affected, and she tended to reverse the order of words and letters.

Our case-history and the nature of the fits strongly suggest the possibility of hysteria—a subconscious wish to remain cared for in institutions rather than to work for a living in the cold, exacting world without. A desire to "hold the stage" and to excite wonder and comment might conceivably be at the bottom of the phenomena. It is a theory that must be accorded respect.

On going into the case-history more thoroughly and collecting information from the patient's married sister and the staff of the infirmary where she was, when the writing peculiarity first manifested itself in 1926, the nature of the "shock" which restored her speech was discovered. It was the witnessing of the precipitate birth of a child in the bathroom of her ward. The sister of that particular ward described the patient as seeming to be always "afraid to be left alone" and "afraid of the dark"; and further added that "she was in the habit of getting into bed the wrong way round"—that is to say, with her head under the clothes at the foot of the bed and her feet where her head ought to be.

She has been watched carefully over a sufficiently long period now, and the consistency of her actions and habits of life seem to negative any possibility of malingering.

With a little practice one of us found that he could read quite well from a newspaper or book held upside-down. It was also discovered that her backward writing could be imitated with fair speed and accuracy. What could not be achieved was to spell as she does. The weak-minded, as we are aware, are often surprisingly talented in certain directions, but even so it would require considerable practice—and an order of intelligence above and beyond what we believe her to possess—to acquire the art of spelling backwards long and difficult words, quickly and correctly, in the relatively short time that elapsed between her discharge from this hospital in 1924 and her admission to the infirmary 18 months later.

Pick's work on "Contrary Actions," referring to cases of speech reversal, has suggested that the writing and reading might conceivably be pseudo deliberate, coupled with a certain amount of negativism. But the patient is not a schizophrenic, nor does she show any signs, so far as we can discover, of schizoid trends or tendencies. She is willing and coöperative rather than negativistic.

The word hysteria is such an indefinite and unsatisfactory entity—everything we do not understand is shot into that psychological ashpit of medicine—and rather than be accused of this unoriginality we would, while recognising the essentially hysterical nature of the case, like to be a little more profound, and we would venture to submit that the disorder is one of faulty spatial discrimination, consequent upon some psychical disturbance in the visual cortex. It is conceivable that if there is some dysfunction of the visual cortex—or of the paths linking it up with the motor centres—reading, writing, and drawing, through faulty perceptual processes, might be misrepresented.

Cases are on record where the ability to reinvert the inverted retinal image has been temporarily lost following cerebral disease or injury. A case in point was recorded to Dr. Schweinitz by Dr. Albert Seitz, of Tenn. This was a 20-year-old youth, who suffered a rather severe head injury and for several weeks thereafter saw everything upside-down. This phenomenon disappeared a month later. A similar case was published in the *New York Medical Journal* of Dec. 18th, 1904. Following an attack of measles an 8-year-old boy saw everything upside-down, and as a consequence had considerable difficulty in orientating himself. On closing his eyes, however, the difficulty disappeared.

Weighing up all the circumstances of the case, we believe that our patient is reading, writing, and drawing "*primitively*"—*in other words*, she tends to portray an object as she sees it rather than as training would cause her to perceive it. Our view is that the "fit" which occurred after leaving service was the psychic shock that effected the loss of speech and caused the "learned processes," demanding the effectual coördination of important centres, to revert to a childish type, and that the subsequent "shock" whilst in the infirmary was sufficient to restore the former but not the latter.

Head's work on the organic aphasias (which might reasonably be expected, in no small measure, to apply to those of an hysterical nature also) is instructive. Anything which disturbs the free use of language will tend to affect the power of reading and writing to a profound degree. "Articulate speech, the oldest acquisition, racially and individually, exhibits the most specific and particular changes, whilst the recently developed powers of reading and writing are more massively and indifferently affected." Head concludes that in disorders in the use of language there is interference with the use of language *as a whole* and, though certain aspects of it may be disturbed more than others, the defects of speech cannot be expressed in simple terms of audition, articulation, vision, and writing. In other words, there is a dissociation of the highest forms of expression of thought—i.e., of symbolic thinking and expression. We learn from a study of his work that if vigilance is lowered, as it may be by structural injury, by disease,

· drug intoxication, by fatigue, or by psychic shock, e more highly integrated responses may be thrown t of action and historically simple forms may ppear. The general effect of a specific language sturbance is to throw the patient back upon earlier quired and relatively less complex modes of dealing th the problems that face him, and to limit him a primitive mode of response.

It seems to us, therefore, that "seeing things side-down" might fairly be regarded as a more imitive mode of visual response. Our patient adily admits that her sense of sight plays her false hen "checked-up" with her sense of touch.

The psychic disturbance, we believe, is causing her see objects of the outside world just as they are st upon the retina unless checked by her intelligence -in other words, unless corrected by reasoning and mmon-sense.

The fact that her speech is now normal, while the ssociated manifestations of reading, writing, and rawing remain perverted, may be explained by he universal law that functions which are the latest, enetically, to develop are the last to recover, seeing hat we know that "Each human being learns to peak and to understand what is said to him during is earliest years; the arts of reading and writing, n the other hand, become possible only after he as already expressed himself fluently in words" Head).

It is notable that our patient does not make nistakes concerning objects that she knows must be 'so-and-so" way up. Thus although she may draw —with the paper flat—a person or animal upside down, he interprets them in their natural orientation—i.e., he head on top and the feet below. It is only with eference to objects upon which she can bring to ear no intellectual appreciation that she makes erious errors—e.g., when a pen is held in the air with nib upward no lesson learnt in life, no amount of intelligence, can tell her whether the nib is really pointing upwards or downwards if her vision is playing her tricks, though when asked whether our heads or our feet are on the ground her experience tells her that it must be the feet.

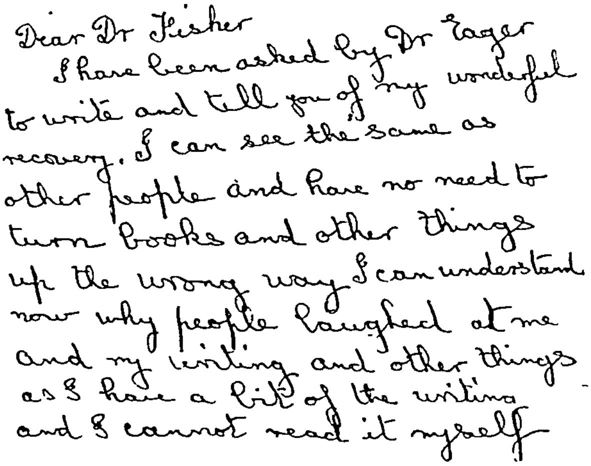
The question whether the loss of speech was a simple hysterical mutism or in the nature of an aphasia seems to resolve itself in favour of the former —with the added explanations and suggestions that we have offered. In contradistinction to our case, who has made a complete recovery from her mutism, Head states quite definitely that in all cases of aphasia that have shown any progress at all, recovery was incomplete and the characteristic disorder was still present to a minor degree. His observation that his non-traumatic cases of aphasia all "progressed" more or less steadily is not without interest for comparison purposes. Our patient shows no want of comprehension of the significance of words or other symbols, as is the way of aphasics; she simply "distorts" them. Furthermore, the aphasic fails to name objects, and experiences more difficulty in reading numbers than words. None of these features are to be found in our case—on the contrary, she reads numerals more easily than words. The backward writing, in certain respects, marches alongside the actions of mirror-writers during hypnosis and in automatic states, and conceivably even the calligraphic displays of mediums during spiritualistic séances.

Inasmuch as all the available evidence points unmistakably to a functional origin, we must perforce class this case in that lazy province of hysteria; at the same time it is the earnest wish of both of us that our attempt at elucidation may do something to stimulate a more lively interest in, and a fuller investigation of, similar problems in the future.

ADDITIONAL NOTE.

After coming to the above-mentioned conclusions, we felt in duty bound to establish our diagnosis by a trial of hypnotherapy. The patient was consequently put under light hypnosis and, whilst in this state, it was suggested to her that after waking she would write, read, and see everything normally. Before leaving the room she was asked to write the operator's name and address on a slip of paper. This was performed, quite freely and without hesitation, in an ordinary manner. The following morning this letter was received (Fig. 5).

FIG. 5.


Dear Dr Fisher
I have been asked by Dr Eager
to write and tell you of my wonderful
recovery. I can see the same as
other people and have no need to
turn books and other things
up the wrong way I can understand
now why people laughed at me
and my writing and other things
as I have a bit of the writing
and I cannot read it myself

There is no doubt now that the diagnosis has been clinched. The patient has been discharged from the hospital, and so far as we can tell at present a complete cure has been effected. She takes a keen delight in writing numerous letters to her relatives and friends "just to show them how well and happy she is."

We desire to acknowledge our indebtedness to Dr. G. W. B. James and to Dr. Macdonald Critchley for the considerable help that they have given us in the preparation of this article; and to the nursing staff of the Devon Mental Hospital for their willing coöperation and assistance.

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THE THERAPEUTIC EFFECTS OF PLASMOQUINE IN PREGNANCY.

By Philip Manson-Bahr, D.S.O., M.D. Camb., F.R.C.P. Lond.,

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The chemical composition and therapeutics of plasmoquine as an efficient antimalarial remedy have recently been much in the public eye, so that its rôle in the routine treatment of the various clinical forms of malaria is now being more widely understood. This subject has been summarised in a recent paper by Prof. W. Schulemann,[1] but there is one aspect of plasmoquine therapy to which few references can be found in the literature—viz., its application in pregnancy. All those who have treated malaria on a large scale will readily recognise the dangers to which pregnant women in the tropics are exposed should they contract a virulent attack. There is a widespread and popular belief, which is fostered by European practitioners in the Far East, that periodical dosage with quinine predisposes to abortion. So strongly is this belief held that in the past I have treated pregnant patients at term who were suffering from advanced malarial cachexia but who had been strictly forbidden by their medical attendants to take quinine in any form in order to check the ravages of the fever. The grounds upon which these beliefs rest appear to be derived more from clinical experience than from scientific evidence. There exists, for instance, very definite proofs that

The pharmacologists, however, are insistent that quinine has a selective action on the uterus. Dixon[5] distinctly states that quinine may bring on labour pains in women who are predisposed to abortion. Sollmann[6] says that quinine stimulates the contraction of the uterus and increases its tone, especially when applied to the excised organ, and the greater the activity and tone of the uterus the more rapid the action of the quinine. It is usually perceptible 40 minutes after oral administration.

From the molecular structure of plasmoquine it is reasonable to infer that its therapeutic action upon the uterine muscle would be different from that of quinine, and it has been found as the result of experiments on animals carried out in the Bayer Works in Elberfeld * that in concentrations of 1 : 50,000 to 1 : 100,000 plasmoquine has no influence upon the isolated uterus of guinea-pigs. In situ, the uterus does not react to an intravenous injection of 0·05 mg. per kg. body-weight, and contraction is only observed after an injection of twenty times that amount. This, however, is thought to be due to a transitory decrease in blood pressure and not to any specific action.

Six papers have already appeared upon the action of plasmoquine in pregnancy. Jansen[7] successfully treated a pregnant woman suffering from malaria with plasmoquine 0·02 g. (gr. $\frac{1}{3}$), twice daily, as well as with stovarsol (interval treatment with pauses of four days). Nissenbaum[8] was equally successful in a seven months' pregnant malaria patient who had previously been unsuccessfully treated with quinine for seven months. Plasmoquine, 0·06 g. (gr 1 daily, for five courses, was given in this instance ɔer cent.; numerous B.T. schizonts and gametocytes. moquine-compound tablets, commencing with 0·03 g. 0·375 g. of quinine. and increasing to 0·09 g. plasmoɪe plus 1·125 g. quinine. Male child born two days after ation of first week of treatment. During puerperium moquine compound, two tablets twice daily (0 04 g. moquine plus 0·5 g. quinine). for three separate weeks ı an interval of three days between each course.

ase 2.—Benign tertian infection, aged 31. from Assam. ı August 16th, 1929, arrived in England Dec. 22nd, ; frequent attacks of malaria not reacting to quinine. ee months pregnant; spleen enlarged; slight anæmia; noglobin, 80 per cent.; B.T. parasites found in India. rse of plasmoquine compound given as in Case 1; maxim dose 0·04 g. plasmoquine daily. Male child born at term; no relapses during parturition. Reported two rs later; no return of malaria.

ase 3.—Subtertian infection. aged 33, from Tanganyika ritory; arrived in England May 17th, 1931; admitted Hospital for Tropical Diseases on May 31st. Temperae, 103° F. First attack of malaria; seven months gnant. Spleen not palpable; slight anæmia; hæmobin, 70 per cent.; many subtertian rings found. Treated above with 0 03 to 0·04 g. of plasmoquine daily. Female ld born August 4th, 1931, and died three days later in vulsions. No further relapses of malaria.

ase 4.—Subtertian infection. aged 29, from Nigeria; ived March, 1931, when three months pregnant. Admitted Hospital for Tropical Diseases on June 24th, 1931. Had en suffering from relapses of subtertian malaria every en to ten days since arrival in England. Spleen not lpable; hæmoglobin, 70 per cent.; numerous subtertian gs in blood; albumin and urobilin present in urine. tient in critical condition. Quinine caused cramp-like lings akin to premenstrual pains, and had therefore not en persisted with. Plasmoquine well tolerated (four blets a day 0·04 g. of plasmoquine plus 0·5 g. of quinine). ly in hospital one week; great improvement in clinical ndition. Two slight relapses reported. Male child born d of September. Seen by her local doctor Feb., 1932; further relapses since birth of child.

Case 5.—Quartan infection, aged 27, from Southern geria; arrived in England May 1st, 1931; four months egnant. Spleen enlarged; anæmia marked; hæmobin, 65 per cent.; temperature, 103° F.; numerous pical half-grown quartan parasites present. Treatment plasmoquine compound, four tablets daily, as outlined ove. Male child born at full term; no further attacks fever.

My experience of this subject is naturally someat limited on account of the scarcity of clinical aterial, but it can be stated from the above facts at the combination of plasmoquine and quinine pears to be well tolerated by pregnant women. d is unattended by danger either to the mother or e child in all three clinical varieties of malaria. consider that the appropriate therapeutic dose of asmoquine compound in this condition is four blets of the standarised product daily (0·04 g. of asmoquine plus 0·5 g. of quinine sulphate) for e separate weeks with a pause of three days' erval between each weekly course.

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on a Hospital Pageant.—It was reported nnual meeting of Tewkesbury Royal Hospital that ant held for its benefit last summer had yielded of between £500 and £600, but that more than unt was being claimed by the customs authorities ainment tax.

Clinical and Laboratory Notes

TWO CASES OF GLANDULAR FEVER IN A FAMILY.

By Alan Moncrieff, M.D., M.R.C.P. Lond.,

PHYSICIAN FOR DISEASES OF CHILDREN, BOLINGBROKE HOSPITAL, WANDSWORTH.

According to H. L. Tidy,[1] writing in 1930, two cases of glandular fever in a family are unusual, although not unknown. Because of this and because the two following cases throw some light upon the incubation period of the disorder they are here put on record.

Case 1.—A. B., aged 7 years, was sent to the children's out-patient department of the Bolingbroke Hospital, Wandsworth, on Feb. 16th, 1932, for fever and swelling of her glands. The history given was that on Feb. 5th the glandular enlargement "behind the ears" was first noticed and on the same day a fleeting rash, described by the mother as like a "blush" over the face and trunk, appeared. Slight fever occurred and persisted and the glandular swelling showed no sign of subsiding during the next few days. For the four or five days before her coming to hospital she had complained of slight headache and loss of appetite, but had otherwise not seemed ill and there was no sore-throat. When seen on Feb. 16th she had a temperature of 99° F. There were many small lymphatic glands easily felt in the posterior triangles of each side of the neck, in both axillæ and in both groins, and the left epitrochlear gland was easily felt. The throat was normal in appearance. The spleen was not felt but the liver was easily felt for a depth of about one inch below the costal margin. A white cell count showed 11,400 cells per c.mm. No differential count was done.

One week later the child returned to the out-patient department having stayed in bed at home. Her temperature was still raised, being 99 2° F., and the glandular enlargement was the same as before. She was admitted to hospital where a blood count was as follows: red cells, 6,100,000 per c.mm.; hæmoglobin, 112 per cent.; white cells, 13,100 per c.mm.; with the following differential count: polymorphonuclears, 52 per cent.; eosinophils, 0·34 per cent.; hyalines, 2·34 per cent.; lymphocytes (large and small), 45·34 per cent. The child remained in hospital for about ten days during which time there was no rise in temperature and the glands rapidly subsided.

Case 2.—Meanwhile on March 1st, 1932, her younger brother was sent up to the out-patient department for the same complaint. B. B. was 5½ years old and on Feb. 26th swellings in his neck had been noticed. There had been no rash in his case. On examination there was a slight rise in temperature to 98·8° F., but the boy looked and felt perfectly well. There were numerous shotty glands in the posterior triangles of the neck, in the left axilla and both groins, and the left epitrochlear gland was enlarged. The tip of the spleen could just be felt, but there was no enlargement of the liver. The throat appeared normal. A blood count showed: red cells, 5,800,000 per c.mm.; hæmoglobin, 98 per cent.; white cells, 13,800 per c.mm.; with a differential count as follows: polymorphonuclears, 45 67 per cent.; eosinophils, 2 per cent.; basophils, 0·34 per cent.; large hyalines, 4·34 per cent.; and lymphocytes (large and small), 47·67 per cent. The child was sent home to bed for a few days, and in a letter from Dr. Patrick Purcell, under whose care both children were at home, dated March 20th, it was stated they had both quite recovered.

These cases present several points of interest. The diagnosis in the first case could not really be definitely established until the brother became also affected, and if the brother had come to hospital as an isolated case it would have been equally difficult to be dogmatic about the diagnosis of glandular fever although it appeared to be the most likely one. The enlargement of the epitrochlear gland in both children is a point noted by other observers as common in glandular fever, while the slight predominance of glandular enlargement on the left side of the body is another small point also previously noted. The blood counts do not show a very marked divergence

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Theobald[3] has summarised the evidence in a paper read in 1930 as follows: Quinine is used in obstetrics (1) to induce labour, and (2) to render labour pains more effectual—i.e., in uterine inertia. For the induction of labour with quinine the routine adopted is to give three or four doses of quinine in ten-grain doses at three-hourly intervals, two ounces of castor oil being given after the third dose. Out of 52 cases there were only six failures to induce labour. There is no doubt that quinine does increase the severity of the uterine contractions, but in Theobald's experience these contractions are not sufficient to induce labour until the patient is at term or close to it. The fact is that quinine is valueless to the obstetrician as an abortifacient.

There appears to be no evidence that quinine, when given in the generally accepted therapeutic doses, has any effect upon the well-being of the fœtus, for Dilling and Gemmell[4] have collected a series of 9765 cases in which quinine was used to induce labour, and have concluded that in only eight stillbirths can this drug have been responsible. This then is the evidence of the obstetrician.

The pharmacologists, however, are insistent that quinine has a selective action on the uterus. Dixon[5] distinctly states that quinine may bring on labour pains in women who are predisposed to abortion. Sollmann[6] says that quinine stimulates the contraction of the uterus and increases its tone, especially when applied to the excised organ, and the greater the activity and tone of the uterus the more rapid the action of the quinine. It is usually perceptible 40 minutes after oral administration.

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Six papers have already appeared upon the action of plasmoquine in pregnancy. Jansen[7] successfully treated a pregnant woman suffering from malaria with plasmoquine 0·02 g. (gr. $\frac{1}{3}$), twice daily, as well as with stovarsol (interval treatment with pauses of four days). Nissenbaum[8] was equally successful in a seven months' pregnant malaria patient who had previously been unsuccessfully treated with quinine for seven months. Plasmoquine, 0·06 g. (gr. 1) daily, for five courses, was given in this instance with the object of preventing abortion. Majumdar[9] treated a group of malaria patients, amongst whom were two pregnant women, with similar doses of plasmoquine, and found that the drug did not cause uterine contractions. He considers that plasmoquine has no detrimental action on the non-striated musculature and the pregnant uterus. Thakkar[10] treated a multipara in the fifth month of pregnancy with 0·06 g. daily, and found it well tolerated. In four other cases in the third and eighth months of pregnancy success was also achieved. Frank[11] in Palestine especially recommends plasmoquine in pregnant women, for he successfully treated a pregnant woman and brought her to full term by combined plasmoquine and quinine treatment. He considers it important, because in this case a tendency to abortion undoubtedly existed. Epstein[12] says that in therapeutic doses plasmoquine has no effect the uterus. It follows that the drug can be conside ed safer to employ than quinine when treating pregn t women suffering from malaria.

SOME CASE RECORDS.

Since 1928 I have treated five cases of pregnant women suffering from all three malaria infection, from the third to the of pregnancy. All have been given p compound in the usually accepted therap over a period of five separate weeks. The r been most satisfactory. My records show further relapse has occurred either during or postpartum. The children have been b term, and the only stillbirth was due to ir tion.

CASE 1.—Benign tertian infection, aged 34, an the Federated Malay States on Sept. 5th, 1928; attacks of fever since March, 1928, uncontrolled by eight months pregnant; enlarged spleen;

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* Private communication.

; numerous B.T. schizonts and gametocytes.
compound tablets, commencing with 0·03 g.
of quinine. and increasing to 0·09 g. plasmo-
125 g. quinine. Male child born two days after
first week of treatment. During puerperium
compound, two tablets twice daily (0·04 g.
plus 0·5 g. quinine). for three separate weeks
val of three days between each course.

Benign tertian infection. aged 31. from Assam,
16th, 1929, arrived in England Dec. 22nd,
ent attacks of malaria not reacting to quinine.
s pregnant ; spleen enlarged ; slight anæmia ;
80 per cent. ; B.T. parasites found in India.
smoquine compound given as in Case 1 ; maxi-
·04 g. plasmoquine daily. Male child born at
no relapses during parturition. Reported two
no return of malaria.

Subtertian infection. aged 33, from Tanganyika
arrived in England May 17th. 1931 ; admitted
for Tropical Diseases on May 31st. Tempera-
. First attack of malaria ; seven months
Spleen not palpable ; slight anæmia : hæmo-
r cent. : many subtertian rings found. Treated
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No further relapses of malaria.

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attended by danger either to the mother or
in all three clinical varieties of malaria.
r that the appropriate therapeutic dose of
ine compound in this condition is four
the standarised product daily (0·04 g. of
ine plus 0·5 g. of quinine sulphate) for
rate weeks with a pause of three days'
between each weekly course.

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ON A HOSPITAL PAGEANT.—It was reported
nnual meeting of Tewkesbury Royal Hospital that
nt held for its benefit last summer had yielded
of between £500 and £600, but that more than
nt was being claimed by the customs authorities
ainment tax.

Clinical and Laboratory Notes

TWO CASES OF GLANDULAR FEVER IN A FAMILY.

By ALAN MONCRIEFF, M.D., M.R.C.P. LOND.,
PHYSICIAN FOR DISEASES OF CHILDREN, BOLINGBROKE HOSPITAL, WANDSWORTH.

ACCORDING to H. L. Tidy,[1] writing in 1930, two cases of glandular fever in a family are unusual, although not unknown. Because of this and because the two following cases throw some light upon the incubation period of the disorder they are here put on record.

CASE 1.—A. B., aged 7 years, was sent to the children's out-patient department of the Bolingbroke Hospital, Wandsworth, on Feb. 16th, 1932, for fever and swelling of her glands. The history given was that on Feb. 5th the glandular enlargement "behind the ears" was first noticed and on the same day a fleeting rash, described by the mother as like a "blush" over the face and trunk, appeared. Slight fever occurred and persisted and the glandular swelling showed no sign of subsiding during the next few days. For the four or five days before her coming to hospital she had complained of slight headache and loss of appetite, but had otherwise not seemed ill and there was no sore-throat. When seen on Feb. 16th she had a temperature of 99° F. There were many small lymphatic glands easily felt in the posterior triangles of each side of the neck, in both axillæ and in both groins, and the left epitrochlear gland was easily felt. The throat was normal in appearance. The spleen was not felt but the liver was easily felt for a depth of about one inch below the costal margin. A white cell count showed 11,400 cells per c.mm. No differential count was done.

One week later the child returned to the out-patient department having stayed in bed at home. Her temperature was still raised, being 99·2° F., and the glandular enlargement was the same as before. She was admitted to hospital where a blood count was as follows: red cells, 6,100,000 per c.mm.; hæmoglobin, 112 per cent.; white cells, 13,100 per c.mm.; with the following differential count: polymorphonuclears, 52 per cent.; eosinophils, 0·34 per cent.; hyalines, 2·34 per cent.; lymphocytes (large and small), 45·34 per cent. The child remained in hospital for about ten days during which time there was no rise in temperature and the glands rapidly subsided.

CASE 2.—Meanwhile on March 1st, 1932, her younger brother was sent up to the out-patient department for the same complaint. B. B. was 5½ years old and on Feb. 26th swellings in his neck had been noticed. There had been no rash in his case. On examination there was a slight rise in temperature to 98·8° F., but the boy looked and felt perfectly well. There were numerous shotty glands in the posterior triangles of the neck, in the left axilla and both groins, and the left epitrochlear gland was enlarged. The tip of the spleen could just be felt, but there was no enlargement of the liver. The throat appeared normal. A blood count showed: red cells, 5,800,000 per c.mm.; hæmoglobin, 98 per cent.; white cells, 13,800 per c.mm.; with a differential count as follows: polymorphonuclears, 45·67 per cent.; eosinophils, 2 per cent.; basophils, 0·34 per cent.; large hyalines, 4·34 per cent.; and lymphocytes (large and small), 47·67 per cent. The child was sent home to bed for a few days, and in a letter from Dr. Patrick Purcell, under whose care both children were at home, dated March 20th, it was stated they had both quite recovered.

These cases present several points of interest. The diagnosis in the first case could not really be definitely established until the brother became also affected, and if the brother had come to hospital as an isolated case it would have been equally difficult to be dogmatic about the diagnosis of glandular fever although it appeared to be the most likely one. The enlargement of the epitrochlear gland in both children is a point noted by other observers as common in glandular fever, while the slight predominance of glandular enlargement on the left side of the body is another small point also previously noted. The blood counts do not show a very marked divergence from the normal of childhood, and although both the total number of white cells (over 13,000 per c.mm.) in each case, and the relative proportion of lymphocytes are slightly raised, the evidence of the blood picture alone is scarcely sufficient to establish a definite diagnosis. This serves to illustrate the point that a single normal blood count cannot be used to exclude the diagnosis of glandular fever. Possibly if blood counts had been done at different periods of the disease more striking evidence of lymphocytosis or mononucleosis would have been found.

The occurrence of a rash in the case of the girl is most unusual and it is to be regretted that it was not seen by a competent observer as the doctor was not called in until five days after it had disappeared. Tidy,[2] reviewing the 1930 epidemic, has stated that none of the children had rashes in the cases seen by him, and partly on this he has elaborated his thesis of the differing types of the disease in children and adults. The longer duration of the fever in the case of the girl, nearly four weeks in all, will fit better with Tidy's adult type than with the usual type in childhood with no rash.

INCUBATION PERIOD.

The last point of interest, and the main reason for this brief communication, is the incubation period in the case of the boy. His illness appeared to begin with swelling of the glands 21 days after his sister had first exhibited symptoms. It is impossible to argue from this that the incubation was three weeks because the exact date of "exposure" is unknown beyond the fact that he was exposed to infection during most of this period. No other cases were recognised among the friends or relatives of these two children so that it is permissible to conclude that the boy caught his glandular fever from his sister. The incubation period of the disease is usually given as from five to ten days (Tidy and Morley [3]), five to twelve days (Tidy [1]), five to nine days (Baldridge,[4] Hasselmann [5]), or seven to eight days (Glanzmann [6]), to quote some of the authoritative pronouncements on this subject. All authors are agreed, however, that the period may be longer up to two or three weeks. Krestin [7] has recorded an example during the 1930 epidemic in this country where a man developed the disease 14 days after his wife, and in an epidemic at a school in 1923 Tidy and Daniel [8] found an incubation period of ten to twelve days. On the other hand, Glanzmann [6] remarks in his comprehensive monograph that where more than one case occurs in a family the interval between the onset of symptoms is usually five days, and in the 1930 epidemic Tidy [2] describes two brothers affected by this disorder with six days between the onsets. The cases here described appear to have an exceptionally long interval between the beginning of symptoms.

I am indebted to Dr. S. E. Levitt for the blood counts in these two cases, and to Dr. Patrick Purcell, of Battersea, for the history before and after their coming to hospital.

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MALIGNANT GLANDS OF GROIN TREATED WITH RADIUM.

By WINIFRED F. BUCKLEY, O.B.E., M.R.C.S.ENG.

THE interest of the following case lies in the fact that the primary focus of a squamous carcinoma which had invaded lymphatic glands and was apparently cured by the application of radium, remained undiscovered.

The patient, aged 65, first noticed a small lump in the right groin in the spring of 1930. She saw a doctor in April, who told her she had an enlarged gland. It was not inflamed but grew slowly, and in November she had an attack of abdominal pain with "*stoppage*" for two or three days. A consultant was called in, and her relatives were informed that she had malignant disease of the intestine, with secondary growth in the gland, and that nothing could be done except to relieve symptoms as they arose. She was losing weight rather rapidly. The gland continued to grow, became *inflamed*, and *it* became painful to flex the thigh. A lump in the left groin was first noticed shortly after Christmas, 1930, when a mass appeared in the upper part of the right thigh.

When I was asked to see her in April, 1931, she had a malignant growth in the right groin, just above Poupart's *ligament, the size of a tangerine orange.* It was inflamed and discharging; it involved the skin and was partly fixed to the deeper structures. There was an enlarged gland in the left groin, the size of a plover's egg, firm, discrete, and movable. Below Poupart, on the right side, was a mass of glands near the femoral vessels, about 3½ in. *by 2 in. in diameter.* There had been no recurrence of intestinal trouble, and apart from slight tenderness in the epigastrium, nothing could be felt in the abdomen. No primary focus was discovered in the cervix or body of the uterus, which was small and senile, or in the vagina, vulva, or rectum.

I asked Miss L. Martindale to see her, and it was decided to admit her to the Marie Curie Hospital for treatment. The gland in the left groin was removed for pathological examination and reported to be a definite squamous carcinoma; radium needles were introduced below the wound and were also inserted into and below the growth on the right side. The *patient returned* home and was readmitted in June and July for radium plaques to the right thigh. In August, as her general condition had so much improved, needles were inserted into the growth below Poupart. In three months from the first treatment the growth had entirely disappeared and is now replaced by a flat scar, pale in colour, and surrounded by pigmented skin. There is a depressed scar in the left groin, and no recurrence of growth. The mass below Poupart has disappeared. The patient, who was emaciated and very frail when first seen, put on a stone in weight after treatment and is now active and well.

The problem is: Where did this squamous carcinoma originate? If there is no central focus, why were glands on both sides affected? The primary focus cannot be intestinal, it cannot have originated in lymphoid tissue. Did it originate from a cell rest of other tissue in the gland, or from the deeper layers of the skin and penetrate the gland?

I am indebted to Miss Martindale and the Marie Curie Hospital for permission to publish this case.

London, W.

A SWEEPSTAKE COT.—The winner of a large sum in the recent Irish sweepstake has given £500 for the endowment of a cot in the West Herts Hospital. It is to be named after her child who was in the hospital many years ago.

MEDICAL STAFF OF HEREFORD HOSPITAL.—By the narrow majority of 30 to 37 the annual meeting of the Herefordshire General Hospital decided to delete the following rule: "No partner of a *member* of the general staff shall be eligible for election to, or remain a member of that staff." The argument in favour of the alteration was that the rule limited the discretion of the governors in selecting members of the honorary staff, but the majority of the medical staff were opposed to it.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF PHYSICAL MEDICINE.

AT a meeting of this section held on April 16th. he chair was taken by Dr. F. G. THOMSON. President. nd Sir ROBERT JONES read a paper on

Manipulation as a Therapeutic Measure.

lanipulation, he said, must form an important part f the armamentarium of the orthopædic surgeon. nd be only one of the many activities on which e was engaged. It was essential to consider the reventive side: in many cases manipulations were he essential sequelæ to faulty diagnosis and faulty reatment. Text-books were very inadequate on his important subject, and mistakes were frequent. t might be assumed that a stiff joint was due to dhesions, either within or without, or both, comlicating some other condition or forming the sole ause of stiffness. The division into intra-articular nd extra-articular adhesions was useful, but to a arge extent artificial.

Adhesions related to injuries required more radical reatment than those due to inflammatory lesions: he former called for active, passive, or even forcible movement and the latter for rest. Unqualified practitioners often—and even the qualified sometimes—failed to make this differentiation; the osteopath tended to break down arthritic adhesions, while the medical man allowed traumatic adhesions to become cicatricial through wrongly prescribed rest. The following point was useful in differential diagnosis: a joint of which the movement was limited in all directions was—or had been—the seat of arthritis; a joint of which the movement was limited in certain directions only, and normal in others, was not arthritic. It was essential to know the normal movements of which each joint was capable. Stiffness rapidly following trauma (excluding fractures and displacements) suggested adhesions; the same was true of a superficial tenderness over a limited area, either on movement or on pressure, or on both. An arthritic joint was usually warmer over its whole surface than a joint with adhesions. Muscular wasting in an inflamed joint was in excess of that caused by mere desuetude; this was not the case in adhesions.

Radiography was invaluable, and should be used even in the apparently simplest case. The radiologist's reading of the film should, moreover, be welcomed. A slightly bent knee, negative to radiology, always suggested a displaced semilunar cartilage. An inflamed post-patellar pad could be felt enlarged when compared with the opposite side. A villous synovial membrane could be diagnosed by palpation and confirmed by finding thickened synovial fluid on aspiration. A bony block to full extension, confirmed by X rays, was characteristic of a displaced tibial spine. A knee which could be voluntarily fully extended, painful and of long standing, negative to X rays, was almost always affected by adhesions. A stiff, flexed knee, with limited movement, should be the subject of careful consideration before deciding on any form of manipulation.

A movable joint was not necessarily the best functional result, especially in tuberculosis. The movement naturally acquired after many years of ankylosis was often the patient's undoing; for this reason the speaker had advocated early bony ankylosis. In certain septic or rheumatic cases of arthritis the formation of adhesions might be prevented by allowing movement as soon as this caused no pain. Before movements were allowed, a precise diagnosis must be made. Torn ligaments or muscles must be protected. Gentle massage checked lymph effusion, relieved pain, and allowed early recovery of tissues, but should be dissociated from movement. A pressure pad was useful if a ligament was torn; pressure limited effusion. In the stage of effusion no painful movements should be allowed lest ligaments stretch.

If a child's joint was fixed in a normal position for a short time no more harm would result than a brief period of stiffness; this did not apply to the elderly. A joint should never be fixed hyperextended. The value of training muscles to contract without producing movement ought to be fully realised as these movements prevented adhesions within the muscle sheath. Movements should be practised in all joints having muscular attachments associated with the fixed joint.

Arthritic joints must not be mobilised until X ray plates showed the cessation of destructive processes. If an increase in movement followed cessation of fixation, gentle active movements without weight-bearing should be relied on for treatment. The experiment must be carefully watched. Active movements were preferable to passive whenever they were possible and effective; they needed hardly any supervision, while passive movements must be very carefully supervised. Masseuses seldom realised that it was only necessary to put a joint through its movements once a day.

FORCIBLE MOVEMENTS.

Recent lesions might be broken down under gas and oxygen, but a more complete anæsthetic was required for firmer bands, as complete relaxation was essential. The movements of the healthy joint under operation should be compared with those of the affected side and the joint should usually be put through its whole range at one operation. The patient should recover consciousness with his joint in full over-correction.

Sir Robert Jones then described his manipulation of a knee-joint, and of a shoulder in the elderly. After-treatment, he said, should begin immediately. An effusion could be ignored unless associated with a decreasing range of movement. Even pain did not indicate rest if the range increased with movement. Pain continuing after the movement was finished was a danger signal. In myositis ossificans rest was imperative until the deposition of bone was ended; even massage was contra-indicated. Correct alignment was of more value than end-to-end apposition in fractures of the long bones. Bones of the lower limb must be given longer to heal than text-books allowed, on account of weight-bearing. Recent fractures should not be mobilised until reduction was complete. Alternating manipulation and fixation were used for congenital deformities such as club-foot and congenital dislocation of the hip.

DISCUSSION.

Dr. J. B. MENNELL spoke of the great influence Sir Robert Jones had exerted, and recalled the history of orthopædic work in the war and the formation of the Shepherd's Bush Hospital. He said that if the range of movement were seriously limited he preferred

lestroyed. Dr. Brown found it difficult to accept heory of very early incest impulses put forward r. Jones, though he had been able to verify the ral theory that nightmares were related to ssed sexual impulses. The intense stimulation he emotion of fear in a repressed form could in many of these phenomena. Fear was more amental than sex in human life. Over-stimulation le nervous system by general fear aroused strong al feelings. He would not say that these early incest encies were not present; but they were difficult icit, and it seemed unnecessary to invoke them.

r ROBERT ARMSTRONG-JONES described personal riences of nightmare, and confessed his inability egard them as wish-fulfilments. He regarded n as recalls of former fear-stimuli by association. sex motive seemed to him fantastic, and he ared his belief in vitalism, particularly hormism. experience had not suggested that dream inter- ation helped the treatment of the insane. He tested against the present tendency to regard all ital abnormality as due to disorder of the endocrine ıds.

r. JONES, in reply, said that terror dreams were mmon but typical nightmares were uncommon.

he CHAIRMAN, on behalf of Dr. B. FARRINGTON, d a paper on the Preface of the De Humani Fabrica Vesalius. In these prefatory declarations, he l, the great master spoke from the zenith of his eer, fully conscious of his worth. Dr. Farrington l translated the declarations into modern language, l the translation would be published in the ceedings. He read extracts from Dr. Farrington's rk.

CTION OF OBSTETRICS AND GYNÆCOLOGY.

At a meeting of this section on April 15th with . VICTOR BONNEY, the President, in the chair, a per on

Ectopic Gestation

s read by Prof. H. LEITH MURRAY (Liverpool). presented the results of an experience of 146 secutive cases, and was written expressly from the ndpoint of the gynæcologist as opposed to that of general surgeon. The attitude of the latter, n faced with an urgent abdominal crisis, usually him to carry out exploratory laparotomy, and ften missed the finer points of diagnosis. The s of 146 cases, on which he had himself operated, ined no ovarian pregnancies, no bilateral tubal ancies, and no interstitial or cornual pregnancies; were there any obvious tubal abnormalities or suggestions of external or internal migration of ovum. In the whole series there had only been desperate emergencies, and none showed primary peritoneal rupture. More than half the cases moderately serious, and usually with somewhat istories of pain and bleeding, with considerable dism. Two patients' first complaint was that were sterile. He always operated on making diagnosis, for he mistrusted tubal gestation and in ry cases the diagnosis should be easy. It be suspected in all cases with a short history ting pregnancy and with the symptom of pain proportion to that found in early abortion. times he had operated and found a condition was an acute exacerbation of old appendage , with peritoneal shock due to leakage. Two s died, and both had a long history of mis- is, with much anæmia and intraperitoneal g. The average age of all the patients was 84 cases the condition was on the right side, in 62 on the left; in 103 cases the pregnancy was ampullar, 40 being isthmial.

The possible terminations of tubal gestation included spontaneous cure, rupture, or continued growth. He favoured operation in every case diagnosed as tubal gestation; it gave immediate relief of symptoms and a rapid convalescence. In 53 of the 103 ampullary cases the fœtus was almost extruded, or seemed likely to be. In 15 of the 40 isthmial cases it bulged outwards and sideways, and there seemed but slight chance of extrusion into the lumen of the tube. He had histological evidence of absorption in situ in only one case. He had met with only 11 cases of primary intratubal rupture, with the fœtus varying between a quarter of an inch and one and a half inches long, and 92 per cent. of his cases showed primary intratubal rupture without further complication. In 71 out of 94 cases there was evidence of considerable round-celled deposit; in 23 there was none. He had no case of primary extratubal rupture; and in none of the cases of tubal pregnancy was there clear evidence of primary intraperitoneal rupture. There was evidence that spontaneous cure might frequently occur.

Prof. Murray then proceeded to discuss the ætiology of tubal pregnancy. Twenty-six of his cases showed absolute sterility; 24 showed one-child fertility with an interval ranging between 5 and 14 years. In studying the likelihood of endosalpingitis as a cause of tubal gestation, he submitted that mild trouble, with maintenance of the patency of the tube, was more likely to be a cause than severe infection. There were six cases of recurrent tubal gestation. The causes of tubal gestation must be of very mild character, and so were liable to be overlooked. If appendicitis was a factor, it did not follow necessarily that its effects would be in the right tube alone. Of the 133 cases of tubal pregnancy, 50 were associated with reduced fertility, and in 42 of the 50 there was evidence of old peritoneal infection. Fifty showed evidence of old pelvic inflammatory infection. He asked that workers in this field would make a more careful statement of what they found in the vermiform appendix in cases of tubal gestation.

A paper by Prof. LEITH MURRAY and Dr. A. A. GEMMELL (Liverpool) was read by the latter on two cases of

SIMULTANEOUS INTRA- AND EXTRA-UTERINE PREGNANCY

of which they said 213 cases had been recorded.

The first of the two patients was a woman, aged 31, who had been married four and a half years. She had one normal labour in 1925 and a miscarriage in 1927. In 1919 a growth was removed from her breast, and in 1927 she had cholecystectomy. The last menstrual period was at the end of October, 1928, and early in 1928 she had a profuse vaginal hæmorrhage which lasted a week. She was taken into hospital in the following January, having had pain in the left iliac fossa, radiating to the right; for six weeks defæcation had been painful. In the previous month she had had acute abdominal pain with violent vomiting. There was a mobile swelling in the hypogastrium, extending three fingers-breadth above the symphysis pubis. The cervix was soft and mobile; the body of the uterus was large and its consistence suggested pregnancy. On the left side was a tender swelling attached to the uterus. Abdominal section was performed on Jan. 15th. Dark blood could be seen through the peritoneum, and as soon as the peritoneum was excised a 12-weeks' fœtus presented. Because of the amount of handling of the pelvic organs it was decided to empty the uterus, which also contained a fœtus. A cystic portion of the right ovary was incised, but it did not contain a corpus luteum. Uninterrupted recovery followed.

The second woman was aged 35 and had had two children, the second nine months ago. Menstruation was regular.

a two-stage operation. He asked if Sir Robert believed in the "locking" of a joint. If a joint could not "lock" the osteopathic manipulation fell to the ground unless adhesions had formed.

Dr. C. B. **Heald** urged Sir Robert Jones to add further practical instructions in his printed paper. He had had personal experience of sudden "locking," relieved immediately and completely by manipulation.

Mr. J. **McMurray** asked Sir Robert Jones if he believed that any manipulation could put right a stretched and displaced cartilage.

Dr. **Murray Levick** described a personal experience of "locking" in the back cured by a sudden voluntary jerk associated with an "electric thrill," obviously due to disturbance of a pair of spinal nerves. He asked how Sir Robert would treat badly strained shoulder-joints; he had found it best to rest the joint, allow adhesions to form, and then break them down. If active exercises were prescribed for shoulder adhesions, the patient used the scapula to increase the range, and the stiff shoulder was not improved.

Mr. **Whitchurch Howell** echoed the welcome of other speakers to Sir Robert Jones.

Dr. W. P. **Kennedy** asked if Sir Robert had much difficulty in educating patients to move the muscles round a stiff joint.

Dr. E. F. **Cyriax** suggested that "locked vertebræ" were due to muscular spasm round a dislocation.

Sir **Robert Jones**, in reply, said he had never been able quite to see how vertebræ became displaced, and yet the striking experiences related by many people seemed to suggest that vertebræ might be shifted. Sacro-iliac displacement certainly occurred, and yet it had never been seen in a radiograph. He thought it was very common indeed to call other conditions of a joint "displaced cartilages," although he would not say that a displaced cartilage could not be cured. Many northern football teams refused to have manipulation, as the results had proved so unsatisfactory. Sometimes patients could only be taught movements by practice on the sound side.

SECTION OF THE HISTORY OF MEDICINE.

At a meeting of this section on April 6th the chair was taken by Dr. R. O. **Moon**, the President, and a paper on Medical, Theological, and Popular Views concerning the

Nightmare

was read by Dr. **Ernest Jones**. During the last 30 years, he said, knowledge had been acquired which put the pathology of nightmare on an entirely new basis, but this knowledge was unfortunately the possession of but a few, the majority still holding an attitude comparable with that of a collection of mediæval medical men towards, for instance, the pathology of malaria. In early days all illness had been believed to arise from malignity, either endogenic or exogenic; the development of scientific medicine had meant the de-moralising of pathology. In laughing at this view, however, the scientific workers had made the old mistake of emptying the baby with the bath, for in some departments of pathology the moral aspect undoubtedly played a part. Few problems illustrated this fact better than the pathology of the nightmare. The early view had been that the nightmare was an attack by a throttling demon. The first suggestion that gastric disturbances produced it was found in the works of Galen, followed by Paulus Ægineta.

The chief characteristics of the nightmare were an oppressive dread, an overpowering sense of suffocation, and helpless paralysis. The somatic theories of its pathology were of subjective origin, arising from the subconscious minds of those who believed them. There was a striking lack of correlation between the supposed causes and the appearance of actual nightmare. Nightmares were pre-eminently mental manifestations based on acute anxiety; anxiety to anything approaching this degree was definitely pathological. Freud had shown the intimate connexion between morbid fear and repressed sex. Only a certain class of subject was liable to nightmare; these people were suffering from an unconscious psycho-sexual conflict, which had usually been stirred by some incident just before the dream; they had a strongly masochistic psycho-sexual constitution, and their repression always dated from very early infancy and related to incest. The attacking animal usually represented a parent. The psychopathological theory did not dismiss the physical theories entirely; when a morbid fear was present it could be excited by an actual situation as well as from its sources in the unconscious mind.

THE RELATION WITH EROTIC DREAMS.

Nightmare and erotic dreams in general were only distinguishable in extreme forms. Few dreams culminating in emission were altogether free from anxiety, and there was every grade of intermediate dream experience. The greater the repression the greater the fear produced by a voluptuous impulse arising during sleep. The ecclesiastical discussions on nightmare in the Middle Ages closely resembled a modern judicial inquiry into rape; the subjects might willingly submit to the attack of the incubus or might be tormented entirely against their will. "Nightmare" and "Incubus" simply meant a lewd demon who visited by night. The popular view, dating from prehistoric times and accepted by the church, was that erotic dreams and nightmare arose from sexual desire in some supernatural being; while the medical view ascribed them to impulses within the body. The medical view had prevailed over the popular view for erotic dreams in the sixteenth century, for the nightmare only in the eighteenth century. The two views had much of interest in common. The modern psycho-analytical interpretation held that both nightmare and erotic dreams were endogenic and arose from repressed sexual wish, thus combining the truth of the two older theories. There had to be error in the theory in order that its believers might escape the sense of guilt; the sexual origin was projected either on to other beings or on to some inanimate process in the body.

The **Chairman** asked whether true nightmare was very common. He recognised the intermixture of pleasure and pain, but did not think fear was on the same footing. He suggested that Freud had confused genus and species—generalised libido and sexual desire; his doctrine was just as materialist as any other variety of scientific materialism.

Dr. **William Brown** said that throug ages philosophers had shown flashes of illu about the dream. The dreams of antiquity ill psychological principles. Plato had reg as a manifestation of the lower self. realised, as Aristotle had, that the dream experiences. Spinoza had said that it work pendently of the control of external im and therefore became ridiculous. Dreams guardian of sleep, taking up into themselves dis stimuli, but in extreme anxiety-dreams this r William said he had some difficulty in deciding hether he was dealing with tiny lymphatic vessels id glands, instead of nerve-fibres and ganglia, in e course of the operation. In an infant, he was not ıre that frank exposure of the lumbar sympathetic ıain on the left side and division of the trunk above ıe second and below the fourth ganglion was not the ore satisfactory operation, ramisection being perrmed at the same time. The constipation was ımpletely relieved by the operation, and this relief ıd now continued for 14 months.

After operation, a full-sized sigmoidoscope was passed ırough the pelvirectal sphincter on a few occasions, the ılon being emptied by means of an irrigating tube. Two months after operation a barium meal and enema demonstrated the pelvic loop of colon still dilated but greatly reduced in diameter. The transverse colon was also considerably reduced. Seven months after operation marked dilatation was still present, but there was slight further improvement. The umbilical girth at the time of operation was 24¾ inches. Five days later it was 21¾ inches, and the latter measurement was the same two months later. Seen recently, the child's general health was good; the constipation was relieved, but distension remained.

Mr. A. B. Clery showed a boy, aged 6½, who was badly burned across the chest and neck, and successfully treated by a skin graft.

Mr. A. A. McConnell read a paper on Some Lesions in the Region of the Pituitary Body.

REVIEWS AND NOTICES OF BOOKS

iseases of the Kidney.

By W. Girling Ball, F.R.C.S. Eng., Surgeon to St. Bartholomew's Hospital, London; and Geoffrey Evans, M.D. Camb., F.R.C.P. Lond., Physician to the Hospital with charge of Out-patients. London: J. and A. Churchill. 1932. Pp. 424. 36s.

A book devoted exclusively to diseases of the idney is clearly an ambitious undertaking. It is good hat two writers of the calibre of Mr. Girling Ball nd Dr. Geoffrey Evans should have collaborated o produce this volume. The value of a combined nedical and surgical text-book on the kidney is xemplified sufficiently in one chapter only, that on ymptomatology. The surgeon confronted for example vith a case of renal hæmaturia is too often inclined o neglect the medical possibilities of the diagnosis, ut he will not do so if he has digested the information iere supplied. Again in the account of the examinaion of a urinary case, the value of collaboration is vident.

The surgical part proper opens with an account of the ongenital lesions of the kidney and ureter: there are iumerous illustrations with short clinical descriptions ippended of which full use must be made to amplify the text. These illustrations are all good, and help he story, while certain of them are admirable. The characteristic mesially directed lower calyx in horse-shoe kidney is only mentioned beneath an illustration in another chapter (Fig. 52) and not in the general text, but no careful reader should be embarrassed thereby. In the discussion on movable kidney there is evidence of a proper appreciation of the value as well as the limitations of surgical treatment, and in the advice upon kidney injuries conservative methods are rightly recommended where possible, the indications for surgical intervention being adequately summarised. The chapter on hydronephrosis is of particular interest and includes mention of the majority of the accepted causes of the condition. The exact views of the authors on the question of hydronephrosis of uncertain ætiology are not made quite clear, for whilst on page 157 we find the term "congenital" hydronephrosis allotted to those cases occurring in fœtuses or young children, or due to some congenital abnormality in position or structure of the kidney or its vessels, there are subsequently frequent references to cases regarded as congenital hydronephroses to which these criteria do not apply. It is generally recognised by urologists that the so-called abnormal vessels frequently found in adult hydronephrosis are not primarily abnormal, and that their kinking effects on the uretero-pelvic junction are only produced after the hydronephrosis has already commenced to form. There is a vessel described as abnormal in the caption to an illustration on page 174 which would appear to be the normal inferior branch of the renal artery; if this is so, the case should rightly fall into the group classified as hydronephrosis of uncertain ætiology instead of being regarded as a congenital hydronephrosis. It is a small point, and the authors' interpretation of the picture may be right; the doubt is raised to show how carefully the book needs to be read. The discussion on the ætiology of the unexplained cases includes mention of the theories ascribing it primarily to inflammation, congenital narrowing, and spasm respectively of the uretero-pelvic junction. The question of pyelovenous back-flow is dealt with in the pathological section.

In the chapter on non-tuberculous infections the classification adopted is founded on a distinction between cortical and pelvic infections, with acute suppurative nephritis as a connecting link; this is a sound basis on which to describe these infections and has led to an orderly account. *B. coli* infections in general are regarded as being hæmatogenous in the majority of cases, whilst tuberculous infection is stated to be blood-borne when the primary source is distant, and lymphatic when the primary source is in the neighbourhood of the kidney. The less controversial subjects of tuberculosis and calculus are well described, and the chapter on renal tumours includes a simplified classification of the malignant renal growths; a few histological microphotographs might be included in this section with advantage. The account of operations on the kidney supplements those in the standard text-books of general operative surgery, but in none of these, we think, will be found such close descriptions of the difficulties and risks that may be encountered or greater descriptions of the routes of operation.

Certain portions of the book dealing with what are usually considered the purely medical aspects of renal disease would be disappointing if it were not remembered that to expect a lucid exposition of a subject where so much of our knowledge is imperfect would be illogical. On page 48 the term "uræmia" is properly limited to those toxæmic states which complicate or terminate severe kidney disease and in which urea retention occurs, but in the sentences immediately following this distinction disappears, while the conception that pseudo-uræmia is a consequence of hypertension as opposed to a chemical phenomenon is not sufficiently brought forward. These passages form an example of the demand for close reading which is made. The truth may easily be sacrificed in the attempt to be clear and simple, but nothing of the sort is found here;

She had had acute attacks of pain in the left side, and in the last she nearly fainted. Attempts at micturition produced cramp-like pains. On opening the abdomen a moderate amount of blood was found in the left half of the pelvis. The left tube, which was the size of a sausage and contained an ampullary mole, was removed. After the operation she bled for three days, but there was no suggestion of labour pains. The size of the uterus corresponded with the period of amenorrhœa, and natural delivery of an 8 lb. child occurred.

It was clear that many cases had been included in this title which should not have been. The maximum incidence of this condition was in the active child-bearing period—i.e., 25 to 35 years of age. It seemed that previous pregnancies predisposed to the condition, and hence that postnatal complications were causal factors. There were no definite criteria available on which to base a prognosis as to the fate of the intra-uterine ovum. Cases in which uterine pregnancy occurred in the presence of a retained ectopic pregnancy should be placed in a separate category. A retained fœtus was not apt to cause symptoms, and even a subsequent intra-uterine pregnancy, with disturbance of the abdominal contents, was but little likely to provoke them. Neither was the retained fœtus likely to cause difficulty in labour.

DISCUSSION.

Mr. CLIFFORD WHITE referred to a case of extra-uterine pregnancy in a woman who had had a child five years before, and a miscarriage six years before.

She was admitted as an emergency; she had had severe vomiting and bearing-down pains. On admission there were signs of acute intraperitoneal hæmorrhage, and an abdominal mass was evident. Laparotomy was immediately done, and the left tube was found to be gravid, the uterus being enlarged to the size of a 12-weeks' pregnancy. Both ovaries were healthy, and neither was removed. In a few months she was delivered of a living child of 8 lb. 13½ oz. weight, and it weighed 9 lb. 3 oz. when the mother was discharged.

Mr. W. C. W. NIXON spoke of the significance of a purple discoloration around the umbilicus in cases of ectopic pregnancy.—Mr. A. J. WRIGLEY said that at St. Thomas's Hospital a large proportion of cases of ectopic pregnancy were operated upon by the general surgeon. Salpingitis was present in one case in five.—The PRESIDENT said it had recently been his view that there must be some defect in the tube in these cases, perhaps a low degree of inflammation. Non-inflammatory kinks were probably a common cause of tubal gestation.—Dame LOUISE MCILROY asked whether Prof. Murray had had experience of pain being referred by the patient to the shoulder in these cases; she had had one or two in which that was so. She also asked whether he always removed the affected tube. In one or two cases in her experience the ovum was projecting from the tube, and after she squeezed it out complete recovery followed.

Prof. MURRAY replied that he was not aware of having seen a case with purple discoloration. In only a few cases was pain referred to the shoulder-tip. In few of his cases was there a large effusion of blood; he had never intentionally conserved a tube unless there was a special reason for doing so.

Mr. DOUGLAS MACLEOD read a paper on two cases of

Struma Ovarii.

An alternative term, he said, was ovarian goitre, and the condition was an ovarian tumour, most of which consisted of thyroid tissue. These cases supplied information favouring the teratomatous origin of these tumours. Thyroid tissue was a small part of teratomatous cyst, and in some cases it grew out of all proportion to other structures. He thought that sytematic examination would show that thyroid tissue was present in tumours of this region more commonly than was generally believed; it was usually of the colloid type. In the subjects of these tumours menstrual irregularities were frequently noted, and usually the women were multiparæ. Yet symptoms of hyperthyroidism were conspicuous by their absence. The first of these tumours contained hair, skin, and sebaceous material, and the macroscopical appearance was a honeycombed one. The second case was complicated by an inflammatory condition. The thyroid tissue was in the lining of the cyst, and so was actually part of it.

The PRESIDENT described two cases of

Implantation-endometriomata.

He said he had had, in all, six cases of endometrioma in the abdominal wall; they had followed either abdominal curettage or myomectomy. A lump appeared in the abdominal scar, and gradually increased in size, in a period of from two to six years. In one of these present cases the lump was the size of a walnut, and it became very tender and painful at each monthly period. On excision he found the tumour to consist of a strong fibrous matrix, with hæmorrhagic areas and typical endometrial tissue, uterine glands, and stroma. He brought the matter forward to impress the lesson that in abdominal curettage and myomectomy it was very important to cover the wound edges with linen—better with rubber—sheeting; otherwise scrapings might get implanted and cause such a swelling as that described.

Prof. MURRAY said he had done myomectomy and intra-abdominal curettage many times, but had not yet had a case of implantation tumour, though he had never troubled to protect the edges of the abdominal wound.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

AT a meeting of this section on April 1st, with Mr. R. ATKINSON STONEY, the President, in the chair, a *case of*

Hirschsprung's Disease

was reported by Sir WILLIAM WHEELER.

The patient was a boy, aged 2 years, suffering from increasing constipation and marked abdominal distension. Aperients and enemata had failed to act, and distension was progressive. There was the usual absence of signs of obstruction and toxic symptoms were not marked.

The case presented one unusual feature. The pelvic colon was not dilated for two or three inches above the pelvirectal sphincter, and the rectum was normal. Radiography before operation showed an enormous *loop* of descending colon. The barium meal was visible a week after ingestion, notwithstanding repeated washing out of the colon. The barium enema also revealed the colon to be five or six times the normal diameter. The ascending colon was not dilated, and the transverse only moderately so.

The operation, performed in February, 1931, was that recommended by Rankin and Learmonth. The posterior peritoneum was divided from the promontory of the sacrum to the origin of the inferior mesenteric artery. The presacral nerve and its branches were not *found* easy to define, but communicating filaments from the second, third, and fourth sympathetic ganglia were divided and the area cleared of loose connective tissue. The inferior mesenteric artery near its origin was similarly denuded, *but* no very definite ganglia were found. The operation was rendered more difficult by the attachment of the mesocolon *to* the right of the middle line.

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[*See also pp.* 22, & 23.]

The authors state that the classification and nomenclature of Bright's disease follow the British medical tradition, and that there is no radical departure from traditional teaching, despite American, German, or French views on nephritis. It was a wise decision, however, to accept the conception of nephrosis as standing between toxæmic kidney on the one hand and acute nephritis on the other, and the design to follow British medical tradition has not prevented the authors from recognising the modern conceptions of focal embolic nephritis and hyperpiesia. The establishment of "toxæmic kidney" as an entity is not easy. On page 201, for example, it is stated that this group includes all those forms of kidney disease, histologically chiefly degenerative, which are conterminous with their cause, a view which does not harmonise with the inclusion in this group of many of the most disastrous types of nephritis occurring in pregnancy. The student of modern work on renal disease in its medical aspects is accustomed to select the group described as "chronic interstitial nephritis" as a touchstone to the author's general conception. When this is applied to the present work some disappointment will be felt at the nebulous character of the group described. The second paragraph on page 258 appears to define the cases included under this term, but after close study we find ourselves unable to form any clear idea of what the authors really wish to be included under this heading.

The book contains useful descriptions of technical methods, is beautifully illustrated—there are eight coloured plates and 159 text-figures—and forms a valuable addition to existing literature on the subject.

Alcoholic Fermentation.

Fourth edition. By ARTHUR HARDEN, Ph.D., D.Sc., LL.D., F.R.S., Emeritus Professor of Biochemistry, University of London. London: Longmans, Green and Co., Ltd. 1932. Pp. 243. 15s.

THIS standard work, which has now reached its fourth edition, needs no introduction to biochemical readers. Alcoholic fermentation is now a subject of its own, and the advances in recent years have been so great that, as Prof. Harden says, it has been all but impossible for him to cover the additions to the literature made since the publication of his last edition. He succeeded in summarising the most important papers, and has included all the recent advances. The summary of the more recent observations of Euler and Neuberg is a brilliant piece of work. This work is indispensable to anyone interested in enzymes in general and in alcoholic ferments in particular.

Recent Advances in Botany.

By E. C. BARTON-WRIGHT, M.Sc. Lond., Chief Assistant for Research in Virus Diseases of the Potato at the Scottish Society for Research in Plant Breeding, Corstorphine. London: J. and A. Churchill. 1932. Pp. 287. 12*s.* 6*d.*

THE subject matter is divided into nine chapters, of which one is devoted to some theories regarding plant structure and one to palæobotany and experimental methods in relation to the species problem; the fungi take up three chapters, and the brown and red algæ two. The last chapter dealing with the virus diseases of plants is likely to be of most interest to our readers, for it provides in easily accessible form a summary of the information so far obtained with regard to this obscure subject in plants. In the selection of material for review the author has omitted special reference to the genetical and cytological aspects of the subject as both these branches are to be treated by other authors in future volumes. Where necessary, references to literature of pre-war date have been included in order to present a connected picture of each subject dealt with. The book should prove particularly useful to students reading for final examinations in botany.

Clinical Lectures on Psychological Medicine.

By HENRY YELLOWLEES, O.B.E., M.D., Physician for Psychological Medicine, St. Thomas's Hospital. London: J. and A. Churchill. 1932. Pp. 310. 12*s.* 6*d.*

THE range of these clinical lectures is very wide: the whole of mental disorder is discussed in 14 entertaining sections of a book which has retained the familiar language, the discursiveness, pointed *illustrations, and lively anecdotes* which stimulate the student's interest. The psychoses are dealt with mainly from the Kraepelinian standpoint, with brief reference to the writings of Meyer and McCurdy; the psychoneuroses according to the modified Freudian view now current among most non-Freudian psychotherapists in England. On some points the author's statements are disputable—e.g., his insistence on insight as an unfailing touchstone permitting sharp distinction between psychoses and psychoneuroses, but as the work is not intended for psychiatrists, such part-truths may be permissible. The book is professedly elementary; it would therefore be unreasonable to complain that it is dogmatic. The style is easy, and in places almost rollicking; the author is a psychiatrist of much clinical experience and common sense; and the simple, confident mode of presentation is well suited to the purpose of instructing medical students and general practitioners in the outlines of psychiatry. The final chapter, an address to psychologists, contains a vivacious criticism of the Freudian position, ending with a serious estimate of the ultimate task of psychology which Dr. Yellowlees sees as bridging the gulf between science and the mysteries with which religion alone deals.

A Synopsis of Pharmacology.

Second edition. By the late DOUGLAS COW, M.D. Revised by G. NORMAN MYERS, M.D., B.S., M.Sc., B.Sc. Hons., A.I.C., Beit Memorial Fellow, Pharmacological Laboratory, University of Cambridge. London: J. and A. Churchill. 1931. Pp. 171. 7*s.* 6*d.*

THIS small book, originally dedicated by its author, the late Dr. Cow, "to that Great Army of Medical Students, some 80 per cent. of the whole who in examinations are within measurable distance of the Rubicon that divides the approved from the rejected," quickly proved its worth. It is described as a synopsis, but it is rather more than that, for it contains an accurate and fairly complete account of the essentials of modern pharmacology. It could not be used as a text-book by any one ignorant of the facts, but it will serve to refresh the memory of the student who has read or heard something of the subject. The drugs are arranged in alphabetical order, repetition is avoided by a system of cross-reference, and there is a pithy discussion of the main facts of each. Dr. Myers has carefully revised the first edition to bring it up to date, and his policy of keeping prominently in view the practical needs of the student, should ensure for the second edition the usefulness and popularity of the first.

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[*See also pp.* 22, *&* 23.]

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THE LANCET.

LONDON: SATURDAY, APRIL 23, 1932.

TRAINING IN TUBERCULOSIS.

THE Joint Tuberculosis Council consists of 30 members representing the various societies interested in tuberculosis, with delegates from the Society of Medical Officers of Health, the British Medical Association, the Ministries of Health and Pensions, and eight coöpted members. The Council was formed in 1924 for the purpose of coördinating the study and treatment of tuberculosis and to promote research. Questions are referred to it by government departments, local authorities, and workers in various fields. Important memoranda on notification, disinfection, and employment have been issued, and in 1930 a scholarship tour was arranged in collaboration with the Sun Life Assurance Company of Canada. A report just issued by a committee of the Council discusses the problem of teaching tuberculosis to students and officers of the tuberculosis service. Most of the tuberculous patients who used to attend teaching hospitals now attend the tuberculosis dispensaries or from there are sent to one of the special institutions provided by local authorities. It is possible at the moment for a medical student to present himself for his final examination without having seen a single case of pulmonary tuberculosis, although each year some 40,000 people die of this disease in England and Wales alone. Apart from its importance as a disease, tuberculosis has some claims to be considered a subject on which medical teaching should be based. The teaching of tuberculosis to students would give them an insight into the relationship between social and industrial conditions and the incidence of disease. It would also assist them to know how to examine the chest, for physical signs and X ray interpretations can be learnt better at a chest hospital than elsewhere. Again, the principles of orthopædics can be well taught at a hospital for surgical tuberculosis. To arrange for a more thorough teaching of tuberculosis need not increase the burden of the student whose curriculum is already overcrowded. A knowledge of tuberculosis would help him to understand the principles of pathology and treatment as applied to other diseases; there is no subject better suited for instructing students in first principles. While the claims of syphilis, mental disease, or rheumatism may be admitted, tuberculosis stands alone in this: although one of the most common causes of illness and death it is becoming more and more uncommon in the out-patient departments and wards of teaching hospitals, except such as have a tuberculosis dispensary.

The report makes the following recommendations for training:—

1. That with some notable exceptions the present methods of training students in tuberculosis are inadequate for lack of arrangements ensuring close coöperation between the public health service, and the medical schools and teaching hospitals, thus not utilising clinical material in the dispensaries and sanatoria *belonging to public authorities.* The General Medical Council might urge upon these schools and hospitals the importance of coöperation.
2. That the arrangements for teaching at certain medical schools, where medical officers of the tuberculosis service are lecturers in tuberculosis and have charge of beds, are worthy of consideration at other medical schools where no arrangements at present exist to utilise the personnel and material available under the tuberculosis schemes of the local authorities.
3. That, where Local Government grants are given to assist medical schools or teaching hospitals, it would be reasonable for the authorities to require, as a condition of the grant, proper coöperation with the work of tuberculosis schemes.

These recommendations are worthy of careful consideration, and although it may be impossible or unwise to give to all students a special training in tuberculosis it is undoubtedly a disease with which they should be familiar before qualification. The work of the tuberculosis officer is becoming more and more specialised, and only a man of high professional standing with experience in all forms of tuberculosis can act adequately as consultant and adviser to the general practitioner. It is reasonable to require that every tuberculosis officer should have hospital beds at his disposal and that, where convenient, the medical staff of a sanatorium should be responsible for some clinical work outside the institution. The report is signed by twelve members of the Council and the convener, Dr. G. LISSANT COX. Copies may be obtained from Dr. ERNEST WARD, hon. secretary of the Council, 123, Torquay-road, Paignton, Devon.

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STREPTOCOCCAL INFECTION.

THE subject of this year's Milroy lectures has been aptly chosen. Since the war the volume of original work on streptococcal infection has been immense though of very various value. With some of that work Prof. C. C. OKELL has been intimately associated, and his own contributions have been among the most enlightening. These years have seen a return to many ideas which were long forgotten: in the latter part of the nineteenth century, for instance, both the toxic properties of streptococci and the streptococcal ætiology of scarlet fever were well accredited theories. There are now many established facts to go upon and the time was ripe for the comprehensive summary and criticism which the lecturer concludes in our present issue.

To many surgeons and physicians the present position is a disappointing one. It is very true that scarlet fever is now a relatively slight disease, that the terribly virulent cases of cellulitis and septicæmia are rarer. As Prof. OKELL admits, this result is a by-product of medical hygiene, if in fact medicine can claim any credit for it. In much the same way small-pox appears to have lost its virulence in an increasingly unvaccinated community. This diminished virulence of the streptococcus has lasted for 50 years; and that is a good omen for its perpetuity. But puerperal sepsis remains, almost unaltered in virulence or case-incidence, and the history of epidemic disease should make us chary of hasty optimism. Moreover, experience is teaching that serum therapy has narrow limitations. Acute streptococcal infection is very often the result of an inconsiderable accident; it is an acutely painful disease, and its too often fatal outcome renders it the most distressing of conditions to treat. The impotence of the physician, dealing with a patient, often young, faced with the fatal outcome of a trivial wound, and relatives appalled by a sudden dangerous illness supervening on a state of perfect health often force him to premature incisions which are worse than useless, and make him anxious to use every suggested remedy. Antitoxic sera have been very fully exploited; they have their uses, and will probably always be used; but they are far indeed from proving of universal value. Under these conditions Prof. **Okell**'s lectures may be considered as an expert's report in the breathing space that follows an unsuccessful attack in war. Here is all that experience has taught, and here success and failure are weighed. We have learned a great deal about the enemy; we are glad to know that, with or without our assistance, he is losing ground. We have evolved a few weapons, but they are not enough. Where are we to look in the future? Perhaps, for the present, to the clinician rather than the bacteriologist. In a streptococcal infection which is to have a fortunate outcome, certain features are constant. A continuous fever becomes intermittent; what is the cause of these remissions, and how can we prolong them, and thus relieve the heart? A spreading cellulitis becomes localised; a septicæmia changes to pus formation. How are we to encourage these obviously beneficial changes? Laboratory work has, for the moment, reached the end of its tether; the natural course of disease must be studied, and its lessons must be applied.

If the streptococcus, the pneumococcus, and the staphylococcus were removed from the list of human parasites, infection even to-day in civilised countries would be negligible as a cause of death. They are universal in the bodies of men and animals as saprophytes; we cannot hope to eliminate them by hygienic measures. There are no antidotes for their infections truly and comprehensively specific. Chemotherapy, to date, has helped very little; and **Ehrlich**'s aspiration towards a great universal bactericidal drug seems as far off as ever. Such a situation cannot but stimulate research workers to a fresh outlook and new lines of attack. "When I fixed unwearied eyes on them," said **Leeuwenhoek**, reporting the discovery of bacteria, "I saw their bodies bending with languid motion, making little progress." It is something to be convinced, once again, from Prof. **Okell**'s lectures, that the eyes of the bacteriologist are still unwearied.

CLINICAL RADIOLOGY.

During May, June, and July a course of twelve clinical lectures is to be given at the Radium Institute in London, which is now a constituent part of the National Centre and Post-graduate School of Radiotherapy. The lectures, which are open free of charge to registered medical practitioners, will be accompanied by demonstration of cases illustrating treatment by radium of many regions of the body including skin, tongue, larynx, nasal sinuses, pharynx and œsophagus, breast, rectum, bladder and prostate, the use of radiotherapy in gynæcology, the treatment of sarcoma, and the application of deep X ray therapy. The lecturers are either on the staff of the Centre or members of the teaching staff of various London hospitals, and the course follows in many particulars the precedent of the pioneer course in radium treatment given at the Westminster Hospital in 1929, and embodied in a volume of the hospital's reports.[1] That course was offered in the spirit of Trousseau who, in opening the first session of a new academic year, was accustomed to tell his hearers that he expected to lear as much from them as they from him; and th cognate aim of the Post-graduate School is t stimulate interest in therapeutic radiology i London, especially among young consultants an the resident staffs of the teaching hospital For this reason the lectures have been spread ove three months at weekly intervals instead of bein concentrated as before in a course of a month duration. The Radium Commission has bee conscious from the first that the progress of radi therapy is closely bound up with the popularis tion of the principles of its application throug such channels. Those who know most reali best how imperfect is our knowledge of the actio of radium upon the tissues. As Prof. **Sidney Ru** points out in his paper in our present issue we a still more ignorant of the general physiologic effects of gamma rays than we are of their immedia effects upon cell life, whether malignant or othe wise; it is, he thinks, an encouraging sign th physiologists are beginning to include radiation an instrument for their own use, for this will bene not only physiological study but will in tu yield results having an important bearing radiotherapy. A course of lectures such as th now planned, if it should succeed in attracting number of those who are in touch with the mode technique of treating disease and have not forgotten the physiological principles of th earlier study, should produce just the impul to progress which radiotherapy needs. Prof. Ru indicates directions in which study might be fruit. It is well known that large doses of gamm rays have a destructive action upon the bon marrow; it is not so generally known that cells which disappear from the circulation not necessarily destroyed, they may be no mo than temporarily withdrawn. The importan of the part played by the normal cells of the bo the vicinity of the malignant growth is still sufficiently recognised; he would like all who e in touch with the clinical effect of radiation bear in mind to what an extent some of the vital unctions of living tissues are put out of action y a quantity of radiation which has but a trifling tion upon their other processes. A case recorded y Miss WINIFRED BUCKLEY on p. 884 of our present issue raises, without answering, several of these questions.

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[1] Westminster Hospital Reports, vol. xxi. Radium Pract 1929. Edited by E. Rock Carling. London: H. K. Lewis. 19

The course of lectures, which we commend to the attention of all our readers, will be given on Wednesday afternoons at 4.30 P.M., beginning May 4th, at the Radium Institute, Riding House-street, London, W.1. Particulars may be had from the Secretary of the Institute.

ANNOTATIONS

THE INDIAN MEDICAL COUNCIL BILL

THE proposal to set up an All-India medical ouncil has been approved by the Secretary of State, nd a Bill has now been introduced into the Indian egislative-assembly. Several attempts have been nade to bring the various interests into agreement, but so far without definite result. The chief obstacle no doubt has been the feeling of resentment at the action of the General Medical Council in withdrawing recognition of Indian degrees. Now that the political horizon is clearer, and there has been time to appreciate the motives of the G.M.C., agreement has been brought nearer. But there are still difficulties to be surmounted, and the Bill, if it becomes law, will have to be a compromise. The draft is entitled "A Bill to establish a Medical Council in India and to provide for the maintenance of a British Indian Medical Register." It is proposed that the council shall consist of a president, to be nominated by the Governor-General in Council, or alternatively elected from amongst themselves; one nominated member from each governor's province and three from the government of India; and one elected member from each British Indian university and each provincial committee of the council. The total number of members to begin with would be 28, and the council would meet at least once in each year, much of the routine work being done through provincial committees. Such committees are to be constituted in all provinces in which a provincial medical council exists, and will include all members possessing recognised medical qualifications. The functions of the council will include regulation of medical standards and inspection of examinations, the maintenance of a register, and recognition and withdrawal of recognition of medical qualifications. Decision as to erasure of names from the register for improper conduct will be taken by provincial medical councils, or provincial committees of the central council, or the central council itself, under varying circumstances. It is recognised that the powers which the provincial councils have hitherto exercised will be affected, but this is inevitable, and the provinces will have to be asked to submit in certain matters to the jurisdiction of the All-India Council. Much work will still remain for them to do. No mention is made in the draft of the licentiate class. There was a general consensus of opinion at the conference of June, 1930, that the central council should at first, at any rate, deal only with graduate qualifications; but nothing in the Bill excludes non-graduates permanently. Organisations of licentiates have petitioned the Government of India for inclusion and there are many arguments in its favour. Licentiates far outnumber graduates. They fill a very important place in the medical arrangements of the country, and their education and status are in need of regulation and standardisation. It is significant that the licentiates themselves are continually pressing for extension of their curriculum, and improvement of the medical schools in which they receive their training. Criticism has also been aroused by the fact that there is no provision in the Bill for the reservation of official appointments and other professional privileges to registered practitioners. It is satisfactory to note that the main principle of the Bill has met with general approval by the profession at large.

THE CAUSES OF HOOKWORM ANÆMIA.

RATHER over a year ago[1] under this heading we summarised evidence for the conclusion that waste of blood by hookworms was the essential cause of the anæmia they produce. Since then the matter has been carried for one species from the region of reasoned conclusion towards that of observed fact. By devising a clamp which, while not interfering with blood-supply, forms a small tank filled with normal saline, H. S. Wells[2] has watched the life of hookworms in the opened intestines of dogs narcotised with soluble barbital. The whole process can be seen when *Ancylostoma caninum* attaches itself near the tip of a villus, though the worm is in fact restless until it, so to speak, shoulders its way to a deeper and presumably more vascular hold. The blood-vessels of the selected villus dilate remarkably, yet hitherto it does not seem to have been suggested that a vasodilator is one of the substances secreted by the glands which open in or near the hookworm's mouth. Yet that would now seem to be the case, and the presence of such a body very obviously subserves the needs of a parasite which, as is now established, feeds ravenously on blood. Thus the hookworm's œsophagus acts as a sucker with a contractile rhythm which may run to 120 or even 250 pulsations a minute. When, by its active movements, the worm has pushed its mouth against the surface of a villus, this pumping mechanism is observed to fill the oral cavity and the œsophagus, first with intestinal epithelium and lymph, and then with blood. This blood the œsophagus passes on into the intestine, which in turn expels it in droplets per anum. By manœuvring the tails of hanging attached worms into the mouths of saline-filled pipettes, by counting a known fraction of the red corpuscles which were expelled into this fluid in a given time, and by comparing these with the numbers in the blood of the dog, Wells found that each female *A. caninum* wasted in this way an average of 0·84 c.cm. of blood daily. Now it is widely and emphatically maintained at the present time that a load of less than 25 hookworms is immaterial to man; yet on Wells's figures such a "light" load may imply a loss of half an ounce of blood daily, if these figures for this dog's hookworm can be applied to those of man. This he hesitates to do, in view of the general report that the stools of persons harbouring hookworms are not highly coloured, though he notes that there appears to be no means by which the amount of fæcal blood can be estimated, and that the conclusion that their colour shows that they do not contain blood is assumption. Some light was however thrown on this point by G. Duncan Whyte,[3] who reported 16 years ago from Swatow, China, that when there was rigorous abstention from meat for 72 hours (and meat must include cockles in this locality), evidence of blood could be obtained in fæces when fewer than 20 worms were afterwards recovered. The test used was an alkaline solution of phenolphthalein with hydrogen peroxide, and it was claimed that it would detect one part of blood in 800,000. Seeing that Looss reared *A. duodenale* to full growth in pups, it should be possible to resolve the doubts expressed by Wells as to whether these figures can be applied to the hookworms of man. Seeing the close resemblance in size and structure between *A. caninum* and *A. duodenale* it will be surprising if they cannot; but in the meantime few medical men will be disposed to question the wisdom of refusing to accept as immaterial to the host these "light" hookworm infections, particularly as the validity of the tests which have been held to exonerate them is not universally accepted.

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[1] THE LANCET, 1930, ii., 1193.
[2] Jour. Parasitol., 1931, xvii., 167.

Moreover in instances where the passage of blood through the gut of hookworms has been slow, by the time it reaches the anal end the hæmoglobin has been reduced, so that whatever constituent of blood is of most value to it as food the host's hæmoglobin serves to supply the hookworm with oxygen. Further, a hookworm deprived of blood by detaching it from the mucosa becomes very sluggish, and in the one instance investigated ceased to oviposit. Yet if when replaced it is still vigorous enough to start feeding it rapidly regains its normal activities. It is not unlikely, then, that unsatisfactory nutrition of the worms, due to that poor quality of the host's blood which is the usual accompaniment of a heavy infection, may be a factor in bringing about that lessening of individual fertility which, as Clayton Lane showed,[4] accompanied increase in the hookworm load in those cases where reports were full enough for this matter to be tested. These ingenious experiments have attacked the hookworm problem from a new and promising angle.

ELECTROCARDIOGRAPHIC DIAGNOSIS OF MYOCARDIAL INFARCTION.

THERE are certain changes in the electrocardiogram that are almost pathognomonic of myocardial infarction—namely, well-marked deviation and rounding of the R–T segment, associated with low voltage ventricular complexes, and as a later development the disappearance of the R–T changes and appearance of a V-shaped T wave, either upright or inverted, and often of considerable amplitude. But the time of appearance and disappearance of these changes is variable, and it is possible for a normal curve to be obtained from a patient with myocardial infarction at two stages of the process: first in the earliest stage, and secondly some time after its occurrence. C. W. Holland and S. A. Levine [5] have studied the time relations of the electrocardiographic changes in 328 cases of coronary occlusion. Only 35 of these gave tracings at any time which could be regarded as normal in all respects. Eight were normal in the first few days after the attack, and the authors record the persistence of a normal curve up to a maximum period of ten days. A second group of 19 cases consisted of those from which characteristic curves followed by normal ones were obtained; a return to normal in one of them within four days illustrates how fleeting the changes may be. Finally there were nine who gave no abnormal curves whatever, although multiple tracings were not always taken. From these and other observations we may conclude that the electrocardiogram is undoubtedly of first importance in the diagnosis of myocardial infarction, but like every other means of investigation cannot be relied on exclusively. If a tracing taken from a patient in the early stages of an attack which presents the clinical features of myocardial infarction proves to be normal this is not nearly as strong evidence against the diagnosis as two or more normal curves taken at intervals of two or three days. On the other hand the finding of a normal curve a month or *more after an attack cannot* be taken as evidence that this was not due to coronary occlusion.

TUBERCULOUS MENINGITIS CURED BY DEEP X RAY THERAPY.

FROM time to time cases of tuberculous meningitis with recovery have been reported, but the total number is small and no satisfactory conclusions about the treatment of this terrible affection have hitherto been possible. Prof. Z. von Bókay,[1] of Debreczen in Hungary, now modestly reports success in five proved cases treated with deep X rays between May and August, 1931. It must be the first time that any one person has seen this number of recoveries and the results demand close scrutiny. The ages of the five patients were 12, 6, 4½, 3, and 3 years and the diagnoses were confirmed either by the finding of tubercle bacilli in the cerebro-spinal fluid or by the positive result of inoculating of the fluid into a guinea-pig. In one case, where bacilli had not been found in the fluid, recovery was so rapid after radiotherapy that the diagnosis of meningism was made, but five weeks later the post-mortem examination of an inoculated guinea-pig showed that the cerebro-spinal fluid had been tuberculous. The irradiation employed is described as follows: 162 kilovolts, 4 milliamperes with 0·25 of zinc and up to 3 mm. of aluminium filter, 150–200 R. units with a focal distance of 34 cm. This was applied to the base of the neck, forehead, and temporal regions, the exact situation irradiated varying slightly. Three to four applications were made in each case, with one to two days between the first two, and three to four days between subsequent applications. Recovery, where it took place, seems always to have been complete, a noteworthy feature being the rapid gain in weight as the meningitic symptoms disappeared. Loss of hair appeared to be the only deleterious result of the irradiation and it is possible that the alopecia produced may be permanent, although in one case hair was beginning to grow again over the bald areas a few days after the child left hospital. A more serious possibility is the subsequent development of hydrocephalus or mental deficiency, and it is too soon to say whether Bókay's patients will escape these sequelæ. Moreover, during the months in which these five cases were treated successfully there were elve similar cases in the hospital in which X rays iled completely. Discussing the question of what ctors make for success Bókay emphasises the fact at from a pathological point of view. tuberculosis ay be present either as a diffuse exudative process fecting all the meninges or as a local collection of berculous material in some portion of the meninges. he latter condition is closely allied to the "leaking iberculoma" seen in older children and adults who ive survived the presence of tubercle bacilli in the rebro-spinal fluid; and many of the reported cures" of tuberculous meningitis have been thought come into this class. It is impossible to decide ie exact pathological lesion in Bókay's cases. but ie clinical details given in his paper leave little oubt that they were genuine examples of tuberculous meningitis. This, of course, is often part f a generalised miliary process throughout the body nd, where this is so, cure within the skull cannot be xpected to save the child. Nevertheless, whatever he pathological condition, the cause of death is an ncreasing intracranial pressure and Bókay's point s that if this can be arrested a step forward has een made. The dosage of X rays employed is ery big, but in such a condition as tuberculous meningitis he holds that the *non nocere* principle can be justifiably abandoned and that intensive rradiation of the brain should be carried out without delay. There are many hundreds of fatal cases of tuberculous meningitis in this country every year. and there should be no difficulty in putting the new treatment to an early test.

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[3] Ann. Trop. Med. Parasitol., 1916, x., 79.

[4] THE LANCET, 1930, i., 978.

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[1] Jahrb. f. Kinderh., 1932, cxxxv., 69.

NON-OPERATIVE TREATMENT OF SQUINT.

FOUR years ago[1] a new department was installed at the Royal Westminster Ophthalmic Hospital to deal with cases of incipient squint, and Mr. Montague L. Hine, in a recent paper,[2] gives a useful summary of the routine treatment as practised there. This treatment is directed to the ordinary cases of concomitant internal squint, not to the paralytic cases which are comparatively uncommon. The criterion for concomitancy is that the angle of deviation remains the same in whatever direction the eyes are looking. Its presence commonly depends on a defective fusion-sense or, as Mr. Hine expresses it, a defect in the degree of development of the inherent desire to use the eyes together, which is a normal instinct in mankind. Acting along with this there is often some upset of the normal relationship between accommodation and convergence or a measurable inequality between the refraction of the two eyes. These are the factors which can be remedied by spectacles. There may also be some lack of balance in the pull of the external muscles of the eyeball, not amounting to paralysis. Appropriate treatment depends on the age of the child. Under 18 months of age a squint, if only occasional. may be neglected; if constant, the fundus should be examined to exclude obvious causes of defective sight such as congenital coloboma or old scars of birth hæmorrhages. If it is concluded that the squinting eye ought to possess useful vision, an effort should be made to occlude the good eye for a time so as to avoid the amblyopia resulting from suppression of the image in the squinting eye. Over the age of 18 months it will be found possible in most cases for children to wear glasses when found desirable after retinoscopy under atropine. At this age small errors of astigmatism may be disregarded. When a squint is persistent and does not alternate, any further loss of vision may be prevented by continuing to occlude the fixing eye. In some cases atropine in the good eye may be sufficient to cause the originally squinting eye to fix.

For school-children who are being treated in the ordinary way by glasses and occlusion or atropinisation of the fixing eye, should this treatment prove insufficient the questions arise: for how long should the occlusion be continued? In cases where the squinting eye is nearly blind, if there is no improvement after a month either the occlusion has been inefficient or else the attempt to improve the vision of the squinting eye is hopeless; in other cases improvement may come after considerably more than a month. Should an operation be undertaken? If there is no approximation to binocular vision it is immaterial when an operation for advancement is performed, and in most cases it is better to wait till the child is old enough to have it performed under local and not general anæsthesia. Is it worth while to try stereoscopic training? If there is rudimentary binocular vision this may be considered, but it must be understood that it is somewhat tedious and cannot be easily carried out at home. At some hospitals special clinics have been established where specially constructed stereoscopes and "cheiroscopes" are adapted to the needs of particular children and used to train the power of binocular vision. The cheiroscope is an invention of Dr. E. E. Maddox, by means of which the child's interest is kept up by having to use his hand as well as his eyes. This sort of treatment has never been so systematically attempted as it is at the present day, but it is still in the experimental stage, and in most cases calls for a large number of visits to the clinic. Selected cases only are suitable, and the length of treatment necessary may be judged by the fact that whereas the number of patients treated in 12 months at the Westminster Hospital was 81, the total number of attendances was 3366. In some cases the treatment can best be carried out in conjunction with operation.

HEALTH AND SOCIAL EVOLUTION.

FROM the Halley Stewart lectures for 1930[1] by Sir George Newman we obtain a valuable survey of the development of our hygienic system. From 1738 to 1790 John Wesley went up and down this country with tireless industry and devotion. Neither before nor since has there been a man who taught so many people for so long. And in whatever theological mould he happened to cast his words, he taught *them three things*: that each individual must have a sense of personal social responsibility; that they must bear one another's burdens; and that no doctrine or belief is worth talking about which does not influence character and prescribe conduct. On a similar ground-work public health has evolved in this country. Such we take to be the text of the admirable sermons preached by a lively practical idealist as Halley Stewart lectures and they discharge excellently well the object of the trust which is "for research towards the Christian ideal in all social life." Sir George Newman gives a fine summary of the results which our hygienic system has achieved by that curious combination of exceptional individual effort and the growth of a sense of collective humanism which most great movements show. And he ends with the wise words of Lord Morley: "Progress depends on the room left by the State for the enterprise, energy, and initiative of the individual."

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Moreover in instances where the passage of blood through the gut of hookworms has been slow, by the time it reaches the anal end the hæmoglobin has been reduced, so that whatever constituent of blood is of most value to it as food the host's hæmoglobin serves to supply the hookworm with oxygen. Further, a hookworm deprived of blood by detaching it from the mucosa becomes very sluggish, and in the one instance investigated ceased to oviposit. Yet if when replaced it is still vigorous enough to start feeding it rapidly regains its normal activities. It is not unlikely, then, that unsatisfactory nutrition of the worms, due to that poor quality of the host's blood which is the usual accompaniment of a heavy infection, may be a factor in bringing about that lessening of individual fertility which, as Clayton Lane showed,[4] accompanied increase in the hookworm load in those cases where reports were full enough for this matter to be tested. These ingenious experiments have attacked the hookworm problem from a new and promising angle.

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THERE are certain changes in the electrocardiogram that are almost pathognomonic of myocardial infarction—namely, well-marked deviation and rounding of the R–T segment, associated with low voltage ventricular complexes, and as a later development the disappearance of the R–T changes and appearance of a V-shaped T wave, either upright or inverted, and often of considerable amplitude. But the time of appearance and disappearance of these changes is variable, and it is possible for a normal curve to be obtained from a patient with myocardial infarction at two stages of the process: first in the earliest stage, and secondly some time after its occurrence. C. W. Holland and S. A. Levine[5] have studied the time relations of the electrocardiographic changes in 328 cases of coronary occlusion. Only 35 of these gave tracings at any time which could be regarded as normal in all respects. Eight were normal in the first few days after the attack, and the authors record the persistence of a normal curve up to a maximum period of ten days. A second group of 19 cases consisted of those from which characteristic curves followed by normal ones were obtained; a return to normal in one of them within four days illustrates how fleeting the changes may be. Finally there were nine who gave no abnormal curves whatever, although multiple tracings were not always taken. From these and other observations we may conclude that the electrocardiogram is undoubtedly of first importance in the diagnosis of myocardial infarction, but like every other means of investigation cannot be relied on exclusively. If a tracing taken from a patient in the early stages of an attack which presents the clinical features of myocardial infarction proves to be normal this is not nearly as strong evidence against the diagnosis as two or more normal curves taken at intervals of two or three days. On the other hand the finding of a normal curve a month or *more after an attack cannot be taken as* evidence that this was not due to coronary occlusion.

TUBERCULOUS MENINGITIS CURED BY DEEP X RAY THERAPY.

FROM time to time cases of tuberculous meningitis with recovery have been reported, but the total number is small and no satisfactory conclusions about the treatment of this terrible affection have hitherto been possible. Prof. Z. von Bókay,[1] of Debreczen in Hungary, now modestly reports success in five proved cases treated with deep X rays between May and August, 1931. It must be the first time that any one person has seen this number of recoveries and the results demand close scrutiny. The ages of the five patients were 12, 6, 4½, 3, and 3 years and the diagnoses were confirmed either by the finding of tubercle bacilli in the cerebro-spinal fluid or by the positive result of inoculating of the fluid into a guinea-pig. In one case, where bacilli had not been found in the fluid, recovery was so rapid after radiotherapy that the diagnosis of meningism was made, but five weeks later the post-mortem examination of an inoculated guinea-pig showed that the cerebrospinal fluid had been tuberculous. The irradiation employed is described as follows: 162 kilovolts, 4 milliamperes with 0·25 of zinc and up to 3 mm. of aluminium filter, 150–200 R. units with a focal distance of 34 cm. This was applied to the base of the neck, forehead, and temporal regions, the exact situation irradiated varying slightly. Three to four applications were made in each case, with one to two days between the first two, and three to four days between subsequent applications. Recovery, where it took place, seems always to have been complete, a noteworthy feature being the rapid gain in weight as the meningitic symptoms disappeared. Loss of hair appeared to be the only deleterious result of the irradiation and it is possible that the alopecia produced may be permanent, although in one case hair was beginning to grow again over the bald areas a few days after the child left hospital. A more serious possibility is the subsequent development of hydrocephalus or mental deficiency, and it is too soon to say whether Bókay's patients will escape these sequelæ. Moreover, during the months in which these five cases were treated successfully there were siculitis on rectal examination; for even with oss visual and tactile examination there is a striking fficulty in recognising a pathological specimen. e variations in the thickness of a vesicle appear depend on functional and neurogenous factors ther than infiltrative lesions. The most reliable oss criteria of the probable presence of chronic minal vesiculitis are found in the prostatic urethra. f 66 specimens showing microscopical evidence of ostatitis, in 49 there was evidence of a greater or ss degree of inflammation of the ejaculatory ducts, ree showing no seminal vesiculitis, 30 showing ight indefinite chronic catarrhal seminal vesiculitis, nd 16 showing marked chronic, subacute, and cute seminal vesiculitis. No considerable inflamation of the vesicles was seen in the absence of orresponding inflammation of the ejaculatory duct. he studies show that the ejaculatory ducts are lways involved in posterior urethral inflammation, ut this seldom results in chronic infiltrative change f the terminal portion of the duct and there is a iminishing tendency toward such involvement as he vesicles are approached.

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[3] Ann. Trop. Med. Parasitol., 1916, x., 79.
[4] THE LANCET, 1930, i., 978.
[5] New Eng. Jour. of Med., March 17th, p. 545.

[1] Jahrb. f. Kinderh., 1932, cxxxv., 69.

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ALTHOUGH it is recognised that convulsions are much commoner in infancy than at any other time of life, the reason for this is far from clear. It has been suggested that the unstable and immature nervous system of infants reacts in this extreme way to slight peripheral irritation, but this theory has obvious fallacies, one of which is that severe irritation is not accompanied by convulsions. A striking feature of the metabolism of infants, when compared with that of adults, is the lability of the calcium level of the blood, which is readily upset. Fever is known to affect the acid-base balance of the blood with consequent decrease in the ionic blood calcium. Dr. Stanley Graham[1] believes that convulsions in infancy—apart from organic nervous disease—are often if not always due to a lowering of the blood calcium resulting in increased irritability of the nervous system. On this theory he regards convulsions as a form of tetany, and in a study of the seasonal incidence of convulsions appearing at the onset of infections he finds that the incidence curve runs parallel with that of frank tetany, being highest in the dark winter months and falling in the summer. An obvious criticism of this is that infections of the respiratory tract, which are one of the commonest infections met with in infancy, are themselves more common during the winter. Although the convulsion itself appears to cause the disappearance of the usual signs of tetany, such as those described by Trousseau and Chvostek, Graham says that these signs may sometimes be found a day or two after the convulsion. In support of the theory Dr. Noah Morris[2] states that he has found a lowered blood calcium in many cases of infantile convulsions, even in the absence of any clinical or radiological evidence of rickets. At the same time it must be remembered that very low blood calcium values have been found in children who have never shown any convulsive tendency, which suggests that there must be also some other factor which influences the onset of convulsions. For the control of the actual convulsions Graham finds chloral hydrate in doses of grs. 2 to 4 by mouth or grs. 5 per rectum of the greatest benefit; its effect is rapid and lasts longer than that of chloroform. The dose may be repeated two-hourly if necessary and the treatment must not be stopped when the convulsions cease; instead, the quantity of chloral given should be gradually reduced, the intervals being lengthened until only gr. ½ is being taken twice a day. Having controlled the attack and excluded as far as possible any organic nervous disease one should give calcium chloride grs. 15 to 30 four-hourly for three days. This is said to cause a rapid rise in the blood calcium. It is important to prescribe the chloride and not the lactate, for its action is held to depend on its acid-producing property and not on the calcium. Cod-liver oil may also be administered with the idea of improving the absorption of calcium from the bowel.

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THE use of anæsthetics in the tropics is beset with difficulties peculiar to the atmospheric and the racial conditions in which they must be administered. It is asserted, for instance, that the evaporation rate of ether is so affected that one ounce which takes 20 minutes to evaporate at an English seaside resort in July takes, in similar conditions, 5 minutes in Bombay in the hot season and 11 minutes at Singapore. Writing from his experiences at Singapore Dr. A. Barnsley [1] states that ether from an open mask, although a far more effective anæsthetic in Malaya than in India, still suffers from the moisture with which the atmosphere is saturated. Chloroform he finds, in accordance with general experience, is attended with "an appalling relative mortality." Nitrous oxide and oxygen is not available except in the larger centres, and is here circumscribed in application because of its expense. To superstitious and uneducated people the ritual of inhalation anæsthesia is alarming, and Dr. Barnsley has welcomed the introduction of avertin into practice in the tropics. He believes that, "if used with reasonable care and in suitable cases, it will increase the efficiency of tropical surgery a hundredfold," and has found it highly satisfactory in his own experience. The fall of blood pressure which may occur under avertin influence has been subjected to careful observation by G. W. Taylor and C. C. Lund.[2] They find that usually the clinical state of the patient gives no intimation of the marked drop which may have taken place, the ratio of pulse pressure to diastolic pressure showing little alteration. Occasionally, however, the patient showed a weak rapid pulse, depressed shallow respirations, pallor, and cyanosis. In such cases the response to a single dose of ephedrine has been prompt, and there was no tendency for a second drop after its effect had worn off. Taylor and Lund conclude that the drop of blood pressure which they have observed is independent of surgical shock because the venous oxygen figure in these cases is always within normal limits, and it has been shown that in shock the venous oxygen content is greatly reduced. It may be noted here that E. Desmarest[3] of the Hôpital Ambroise-Paré in Paris, is much impressed by the value of the combination of avertin and nitrous oxide and oxygen, finding that the inhalation of the latter effectually combats the drop of blood pressure which may arise from the former. Also he maintains that any respiratory depression due to avertin injection is easily controlled with inhalation of nitrous oxide and oxygen, the oxygen being increased or curtailed in accordance with the patient's needs and carbon dioxide introduced with the inhalation when effective respiratory stimulation is required.

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SPECIAL ARTICLES

THE MINIMUM COST OF YSIOLOGICALLY ADEQUATE DIETS FOR WORKING-CLASS FAMILIES.

By G. P. Crowden, M.Sc., M.R.C.S. Eng.,
TURER IN INDUSTRIAL PHYSIOLOGY, LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

IMPORTANCE OF PROPER NUTRITION.

There is good reason to believe that proper trition is the most important condition for the aintenance of health and efficiency. Food is the imary factor which determines the state of nutrition men, women, and children. Hence it is of paraount importance to the national health that penditure on items other than food in family dgets should not render it impossible for families ith small fixed incomes per week to provide out of come an adequate diet for the family.

The terrible consequences to national health sulting from food shortage and improper food were ident in Germany in the later stages of and immeiately after the war, as reported on by Prof. Starling 1919.[1] To-day, in England, individual families ay suffer just as much owing to unsound family onomics and bad household management, coupled ith a lack of knowledge of what constitutes an dequate, well-balanced diet.

As in Germany during and after the war it was ot the "breadwinner" who suffered most, so too o-day the mother and the children are the ones ainly affected. If it were not for the many voluntary id organisations, the existence of malnutrition would e much more in evidence. Even so, the figures or 1930[2] published by the Chief Medical Officer o the Board of Education reveal the fact that in ,739,297 medical inspections of children of school ge, 29,876 children were found to be suffering from alnutrition.

Table I.—*Expenditure Per Man-value Per Week.*

Notes.	Food.	Rent.	Clothing.	Fuel.	Other items.	Total all items.
Board of Trade, 1904, distribution of weekly expenditure in working-class families ..	60 %	16 %	12 %	8 %	4 %	100
Ministry of Labour indices of cost for January, 1932; 1914 prices taken as 100	131	154	190	175	175	147
Distribution of weekly expenditure January, 1932; 1904 figures corrected for 1932 indices of cost..	53 %	17 %	16 %	9 %	5 %	100
Weekly budget based on 7/– January, 1932, cost of adequate food per man-value per week	7/–	2/2	2/0½	1/3	7½	13/1

MINIMUM COST OF PROPER FOOD PER WEEK.

Information has been collected from various sources in order to determine the minimum cost of providing an adequate, well-balanced, varied, and physiologically sound diet per unit man-value per week, and, with this figure as a basis, the minimum cost of adequate food per week for families of varying size has been calculated. The sum of 7/– per week per man-value appears to be the absolute minimum of expenditure on food under the best possible conditions of household management and economic purchasing by the mother at the present time.

The Board of Trade inquiry in 1904 furnished data in regard to the distribution of expenditure between the various items which make up the weekly budgets of working-class families. The Cost of Living Index[3] is calculated on this distribution of the weekly income using the 1914 prices of commodities as the basis. Table I. shows the weekly expenditure per unit man-value as calculated from the Cost of Living figures for January, 1932, published by the Ministry of Labour.[4]

WEEKLY BUDGETS.

Table II. shows the weekly budgets of families of man-value 1·5 to 4·5. This table gives figures for the minimum cost of adequate food for such families based on the rate of 7/– per man-value per week. The expenditure on rent and other items in the weekly budget is calculated from the Cost of Living indices and the Board of Trade figures for the distribution of family expenditure shown in Table I.

Table II.—*Family Budgets Based on the Cost of Living Data of the Ministry of Labour and the Minimum Cost of Adequate Food at January, 1932, Price Levels.*

Family man-value.	Minimum cost of food per week.	Rent.	Clothing.	Fuel.	Other items.	Minimum weekly income per family.
1·5	10/6	3/3	3/0¾	1/10½	11¼	19/7½
2	14/–	4/4	4/1	2/6	1/3	26/2
2·5	17/6	5/5	5/1¼	3/1½	1/6¾	32/8½
3	21/0	6/6	6/1½	3/9	1/10½	39/3
3·5	24/6	7/7	7/1¾	4/4½	2/2¼	45/9½
4	28/0	8/8	8/2	5/0	2/6	52/4
4·5	31/6	9/9	9/2¼	5/7½	2/9¾	58/10½

The right-hand column in Table II. gives what appears to be the minimum weekly income which these families need at the present time, assuming that the basis on which the present Cost of Living Index is calculated is a sound one. On the other hand, if the present-day standard of living demands that a substantially greater percentage of working-class family income shall be spent on rent than it did in 1904, then these minimum weekly income figures are too small, while the amount which needs must be spent on food remains the same, for it is based on the physiological needs per man-value and current retail prices.

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AN OPHTHALMIC DYNASTY.

THE death of Hermann Pagenstecher, at the age of 87, recalls a family that has become not only a German national institution, but almost a national industry, for Wiesbaden, where the Pagenstechers practise as ophthalmic surgeons, draws patients not only from Germany but from remote countries. The ophthalmic tradition of the family goes back to Karl Pagenstecher (1824–65), a general practitioner who made a great reputation as an oculist and shares with Donders the honour of describing ocular paralyses in diphtheria. But it was Alexander Pagenstecher who established the ascendancy of the family. An intensely practical man with exceptionally dexterous fingers, he rose rapidly in Wiesbaden where he settled in 1853, doing at first both general practice and ophthalmic work. He had laid a good basis for his work by studying under the great masters of the day; he had worked with Desmarres and Sichel in Paris, with Bowman and Critchett in London, and it was Graefe who had persuaded him to take up ophthalmology. Four years after settling in Wiesbaden he opened a small public clinic for eye diseases, and within a few years this had grown to a famous eye hospital which attracted as students men whose names later became household words in ophthalmology: Theodore Saemisch, Mandelstamm, Berlin, Iwanoff; and two members of the Pagenstecher family, Arnold and Hermann Pagenstecher, Alexander's brother, helped to increase the rising reputation of the hospital by a series of contributions published in the reports of the institution. The death of Alexander Pagenstecher in 1879, at the age of 51, from injuries received by the accidental discharge of a rifle, removed a figure that had become almost legendary. Endless stories of his skill were told and his name was known in every ophthalmic clinic owing to the remarkable vogue of an ointment that passed under his name—yellow oxide of mercury specially prepared for ophthalmic use to eliminate irritating by-products. Probably all the preparations of mercuric oxide used to-day are the descendants of Pagenstecher's ointment, though of course the substance itself has a great antiquity in medicine. The great practical achievement of Alexander Pagenstecher was, however, the elaboration, together with his brother and successor Hermann, of the intracapsular method of cataract extraction. This was, and still is, the only radical departure from the method of cataract extraction described by Daviel in 1751.

Hermann Pagenstecher, though no less a craftsman than his brother, had contributed more widely to ophthalmic literature, his chief contribution being an Atlas of Pathological Anatomy, published in 1875, of which he was a joint author. Sixteen years younger than Alexander, he directed the institution his brother had built up, till 1901 when his son Adolf took charge of it. But the call on his skill never abated. Queen Victoria and the Empress Frederick were amongst his distinguished clientèle. His beautiful hands and slender fingers seemed to perform miracles of operative skill. Heavily hit by the war and the subsequent financial collapse in Central Europe, he continued to practise, and even operate during the past few years. A man of great kindliness and simplicity he was dearly beloved by his patients, and the hardship of recent years was mitigated for him by a substantial sum collected from his English patients and friends by the late Mr. Howard Hodgkin and the late Lady Courtney. Arnold Pagenstecher (1837–1913), a pupil and nephew of Karl Pagenstecher, was another member of this family to carry on the ophthalmic tradition, whilst the work at Wiesbaden is still being continued by Adolf Pagenstecher, the present director of the Eye Hospital.

Ophthalmology has a remarkably large number of dynasties. Direct continuity of father and son occurs a number of times: Snellen, Coppez, Van Duyse, Fuchs, Landolt, Lagrange, von Scily, and Green abroad, Guthrie and Lang in this country, are examples of famous fathers and sons. The fathers must have been trebly blessed; they had sons after their own hearts—and hands and eyes.

A LAY ADMINISTRATIVE OFFICER.

THE Manchester city council has now confirmed the appointment of Mr. George Ogden to the newly created post of lay administrative officer. The post owes its establishment to the very great development of the work of the public health department during the past two or three years. The transfer of the poor-law medical services in itself has more than doubled this work—indeed, perhaps, trebled it from the administrative point of view. All the institutions as well as the hospitals are in the charge of the public health committee, which also controls the district medical service, vaccination, infant life protection, and all matters relating to hospital or medical work formerly carried out by the guardians. Before the transfer of the poor-law medical services, the hospital beds under the control of the committee numbered just over 1000, while now there are considerably over 9000. The new officer is appointed to deal with the lay administrative work for the whole of the department, subject to the medical officer of health. He is entrusted as part of his duties with the special duty of supervising expenditure at, and in connexion with, the various hospitals and institutions, and of advising the medical officer from time to time on economies which it might be possible to bring about. It is particularly hoped that this administrative supervision will effect definite economies in the purchase of food and materials of all kinds, and will further improve the efficiency in the lay staffing of the department, more especially in the larger establishments. There is no doubt, in the opinion of the medical officer of health, that this appointment is a step in the right direction, since much of his time in the past has been taken up by matters which ought to be easily and effectively decided by an officer of the type now appointed. He will thus be left freer for the consideration of administrative policy and development and for the study of those problems which are most important in the application of preventive medicine.

Mr. Ogden, who is 43 years of age, has hitherto been principal administrative clerk in the Manchester public health department. His appointment carries a salary of £1000 a year.

Sir William Watson Cheyne, who has died on April 19th, in his eightieth year, was a great figure from the time when he became Lister's prominent lieutenant in the revolution of surgery. He held the chair of surgery in King's College, London, was President of the Royal College of Surgeons of England, an F.R.S., and surgeon in ordinary to the King. For a period he represented Scottish universities in the House of Commons.

SPECIAL ARTICLES

THE MINIMUM COST OF PHYSIOLOGICALLY ADEQUATE DIETS FOR WORKING-CLASS FAMILIES.

By G. P. Crowden, M.Sc., M.R.C.S. Eng.,
LECTURER IN INDUSTRIAL PHYSIOLOGY, LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

IMPORTANCE OF PROPER NUTRITION.

There is good reason to believe that proper nutrition is the most important condition for the maintenance of health and efficiency. Food is the primary factor which determines the state of nutrition of men, women, and children. Hence it is of paramount importance to the national health that expenditure on items other than food in family budgets should not render it impossible for families with small fixed incomes per week to provide out of income an adequate diet for the family.

The terrible consequences to national health resulting from food shortage and improper food were evident in Germany in the later stages of and immediately after the war, as reported on by Prof. Starling in 1919.[1] To-day, in England, individual families may suffer just as much owing to unsound family economics and bad household management, coupled with a lack of knowledge of what constitutes an adequate, well-balanced diet.

As in Germany during and after the war it was not the "breadwinner" who suffered most, so too to-day the mother and the children are the ones mainly affected. If it were not for the many voluntary aid organisations, the existence of malnutrition would be much more in evidence. Even so, the figures for 1930[2] published by the Chief Medical Officer to the Board of Education reveal the fact that in 2,739,297 medical inspections of children of school age, 29,876 children were found to be suffering from malnutrition.

Table I.—*Expenditure Per Man-value Per Week.*

Notes.	Food.	Rent.	Clothing.	Fuel.	Other items.	Total all items.
Board of Trade, 1904, distribution of weekly expenditure in working-class families ..	60%	16%	12%	8%	4%	100
Ministry of Labour indices of cost for January, 1932; 1914 prices taken as 100	131	154	190	175	175	147
Distribution of weekly expenditure January, 1932; 1904 figures corrected for 1932 indices of cost..	53%	17%	16%	9%	5%	100
Weekly budget based on 7/- January, 1932, cost of adequate food per man-value per week	7/-	2/2	2/0½	1/3	7½	13/1

MINIMUM COST OF PROPER FOOD PER WEEK.

Information has been collected from various sources in order to determine the minimum cost of providing an adequate, well-balanced, varied, and physiologically sound diet per unit man-value per week, and, with this figure as a basis, the minimum cost of adequate food per week for families of varying size has been calculated. The sum of 7/- per week per man-value appears to be the absolute minimum of expenditure on food under the best possible conditions of household management and economic purchasing by the mother at the present time.

The Board of Trade inquiry in 1904 furnished data in regard to the distribution of expenditure between the various items which make up the weekly budgets of working-class families. The Cost of Living Index[3] is calculated on this distribution of the weekly income using the 1914 prices of commodities as the basis. Table I. shows the weekly expenditure per unit man-value as calculated from the Cost of Living figures for January, 1932, published by the Ministry of Labour.[4]

WEEKLY BUDGETS.

Table II. shows the weekly budgets of families of man-value 1·5 to 4·5. This table gives figures for the minimum cost of adequate food for such families based on the rate of 7/- per man-value per week. The expenditure on rent and other items in the weekly budget is calculated from the Cost of Living indices and the Board of Trade figures for the distribution of family expenditure shown in Table I.

Table II.—*Family Budgets Based on the Cost of Living Data of the Ministry of Labour and the Minimum Cost of Adequate Food at January, 1932, Price Levels.*

Family man-value.	Minimum cost of food per week.	Rent.	Clothing.	Fuel.	Other items.	Minimum weekly income per family.
1·5	10/6	3/3	3/0¾	1/10½	11¼	19/7½
2	14/-	4/4	4/1	2/6	1/3	26/2
2·5	17/6	5/5	5/1¼	3/1½	1/6¾	32/8½
3	21/0	6/6	6/1½	3/9	1/10½	39/3
3·5	24/6	7/7	7/1¾	4/4½	2/2¼	45/9½
4	28/0	8/8	8/2	5/0	2/6	52/4
4·5	31/6	9/9	9/2¼	5/7½	2/9¾	58/10½

The right-hand column in Table II. gives what appears to be the minimum weekly income which these families need at the present time, assuming that the basis on which the present Cost of Living Index is calculated is a sound one. On the other hand, if the present-day standard of living demands that a substantially greater percentage of working-class family income shall be spent on rent than it did in 1904, then these minimum weekly income figures are too small, while the amount which needs must be spent on food remains the same, for it is based on the physiological needs per man-value and current retail prices.

Owing to collective agreements for the periodical adjustment of wage rates in accordance with the variations in the Cost of Living Index figure, the data published by the Ministry of Labour do affect the incomes of a large number of working-class families, hence it is reasonable to compare actual present-day family budgets with the theoretically economic budgets calculated from such data and shown in Table II.

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In a number of family budgets examined by Miss M. L. Clark and Miss M. Hetherington, the proportion of weekly income spent on rent is widely different from 17 per cent., and the expenditure on rent alone, which presumably must be paid, renders it absolutely impossible for some of these families to purchase a physiologically adequate diet even on the basis of the minimum figure of 7/- per man-value per week for food. This figure of 7/- per man-value per week presupposes the most economic purchasing and household management by the mother in the family—an assumption which is rarely justified.

Schedule A shows that an adequate well-mixed diet can be purchased at the cost of approximately 7/– per man-value per week. The list of foodstuffs was compiled by the Mothers' Committee of the North Islington Welfare Centre in July, 1929, when the index for food stood at 150. The cost of food per unit man-value per week at that time was 8/2½. By January, 1932, the index for the cost of food had fallen to 131, which reduces the weekly cost per man-value to approximately 7/–.

The quantities of food purchased for the week according to this schedule are for a family of man, wife, and three children, aged, 8, 6, and 3, which according to the Cathcart scale [5] of Family Coefficients shown in Table III. has an equivalent man-value of 3·53.

TABLE III.—*Family Coefficients (Cathcart Scale).*

Man	1·00	Child, 8–10 (9 11/12ths.)	0·7
Woman	0·83	,, 6– 8 (7 11/12ths.)	0·6
Boy, 14 + ...	1·00	,, 3– 6 (5 11/12ths.)	0·5
Girl, 14 + ...	0·83	,, 2– 3 (2 11/12ths.)	0·4
Child, 12–14 (13 11/12ths.)	0·9	,, 1– 2 (1 11/12ths.)	0·3
,, 10–12 (11 11/12ths.)	0·8	,, 0– 1 (11/12ths.) ..	0·2

The dietary is varied, well balanced, adequate in calories, and includes a sufficiency of vitamin-containing foodstuffs, fresh milk, butter, vegetables, and fruits. In calories and proportion of protein, fat, and carbohydrate this dietary is very similar to the diet for the average man adopted by the Royal Society Food (War) Committee.[6]

LONDON FAMILY BUDGETS.

Schedule B gives a few examples of family budgets collected in London, together with the theoretically economic budget for each family according to the man-value as calculated from Table II.

In the case of Family No. 1, the man was a sailor and did not live at home, but allowed his wife 32/6 per week to keep herself and three children, aged 10, 6, and 5, having a man-value of 2·73. At 7/– per man-value per week this family needed 19/1 for food alone, yet they were committed to a weekly rent of

SCHEDULE A.—*Weekly Dietary for Family: Man, Wife, Three Children, Aged 8, 6, and 3. Daily Man-value 3·53. Weekly Man-value 24·71.*

—	Weight foodstuff per week.	In grammes.			Calories
		Carbohydrate.	Protein.	Fat.	
Beef ..	5 lb.	—	333·5	442·5	5180
Rabbit ..	2 lb.	0·8	113·4	40·8	818
Suet ..	1 lb.	—	5·4	423·2	3953
Fish (white)	3 lb.	—	194·4	70·2	1452
Cheese ..	¾ lb.	10·6	87·5	119·1	1505·3
Eggs ..	¾ lb.	4·7	37·7	34·4	491·2
Milk ..	22 pts.	598·4	411·4	448·8	8316·0
Butter ..	1 lb.	—	0·9	376·5	3503
Lard ..	½ lb.	—	—	226·8	2109·3
Dripping ..	1 lb.	—	—	453·6	4219
Flour ..	3 lb.	1007·1	172·8	18·9	5016
Bread ..	26 lb.	5673·2	850·2	23·4	26962
Cornflour .	¼ lb.	99·3	0·9	0·1	412
Oatmeal ..	3 lb.	952·5	162·0	117·0	5653
Rice ..	1 lb.	362·9	30·8	2·7	1640
Peas ..	1½ lb.	428·7	138·2	4·8	2368·5
Sugar ..	3 lb.	1360·8	—	—	5580·0
Cocoa ..	¼ lb.	45·7	20·5	30·4	553·3
Jam ..	2 lb.	629·6	2·8	—	2592·0
Cabbage ..	3 lb.	85·8	19·8	1·35	437
Turnips ..	1 lb.	20·0	5·4	0·45	108
Carrots ..	1 lb.	43·6	5·4	0·45	205
Lettuce ..	¼ lb.	2·3	1·1	0·2	21
Potatoes ..	9 lb.	775·8	67·5	1·8	3555
Apples ..	2 lb.	88·8	2·6	1·8	392
Oranges ..	1 lb.	29·9	2·7	0·4	137
Prunes ..	1 lb.	153·8	11·3	0·9	685
Weekly totals for family		12374·3	2678·2	2839·6	88210·0

—	Carbohydrate.	Protein.	Fat.	Calories per man-value per day.
Proportion per day per man-value	500·8 g.	108·4 g.	114·9 g.	3570
Percentage calories ..	58	12	30	—

Total cost per week January, 1932. } 25·3/– = { 1·02/– per man-value per day, or 7/2 per man-value per week

SCHEDULE B.

Family composition.	Family man-value.	Weekly budget.	Food.	Rent.	Clothing.	Fuel.	Other items.	Income.	Notes
Family 1.— Man .. Wife .. Child, 10 ,, 6 ,, 5	2·73	Actual	13/9	13/6	—	4/6½	2/0½	32/6	Debt 1/4
		Theoretical	19/1	5/11	5/7	3/5	1/9	35/9	Debt 1/4
		Difference	−5/4	+7/7	−5/7	+1/1½	+3½	−3/3	
		Per cent. Difference	−28 %	+128 %	−100 %	+33 %	+17 %	−9 %	Debt 4·1%
		Per cent. Distribution, actual	42·3	41·5	—	14·0	6·3	—	
		Per cent. ,, theoretical	53·0	17·0	16·0	9·0	5·0	—	
Family 2.— Man .. Wife .. Child, 9 ,, 2	2·93	Actual	22/2	13/6	—	—	—	30/–	Debt 5/8
		Theoretical	20/6	6/4	6/–	3/8	1/10	38/4	Debt 5/8
		Difference	+1/8	+7/2	−6/–	−3/8	−1/10	−8/4	
		Per cent. Difference	+8 %	+113 %	−100 %	−100 %	−100 %	−22 %	Debt 18·9%
		Per cent. Distribution, actual	73·9	45·0	—	—	—	—	
		Per cent. ,, theoretical	53·0	17·0	16·0	9·0	5·0	—	
Family 3.*— Man .. Wife .. Child, 7 ,, 6	3·03	Actual	11/3	10/–	2/–	5/–	6/6¾	35/–	Illness, med. Extra fuel. Surplus of 2
		Theoretical	21/2½	6/7	6/2	3/9½	1/11	39/8	
		Difference	−9/11½	+3/5	−4/2	+1/2½	+4/7¾	−4/8	
		Per cent. Difference	−47 %	+52 %	−58 %	+32 %	+242 %	−12 %	Surplus 0·4%
		Per cent. Distribution, actual	32·1 %	28·6	5·7	14·3	18·9	—	
		Per cent. ,, theoretical	53·0	17·0	16·0	9·0	5·0	—	
Family 3.†— Man .. Wife .. Child, 7 ,, 6	3·03	Actual	12/11	10/–	—	1/–	4/11¼	27/3	Debt 1/7½
		Theoretical	21/2½	6/7	6/2	3/9½	1/11	39/8	
		Difference	−8/3½	+3/5	−6/2	−2/9½	+3/0¼	−12/5	
		Per cent. Difference	−39 %	+52 %	−100 %	−74 %	+159 %	−31 %	Debt 6·2%
		Per cent. Distribution, actual	47·4	36·6	—	3·7	18·3	—	
		Per cent. ,, theoretical	53·0	17·0	16·0	9·0	5·0	—	
Family 4.— Man .. Wife .. Child, 11 ,, 9	3·33	Actual	24/3	11/–	—	4/9	3/7	46/0	Surplus 2/5
		Theoretical	23/4	7/3	6/9	4/2	2/1	43/7	
		Difference	+11	+3/9	−6/9	+7	+1/6	+2/5	
		Per cent. Difference	+5 %	+52 %	−100 %	+14 %	+72 %	+6 %	Surplus 5·3%
		Per cent. Distribution, actual	52·7	23·9	—	10·3	7·8	—	
		Per cent. ,, theoretical	53·0	17·0	16·0	9·0	5·0	—	

* Employed ; † unemployed. Med.= medicines.

6, which left 19/– to cover food, clothing, fuel, other items, such as washing and cleaning. This nily, according to the scale shown in Table II., uld have paid 5/11 for rent instead of 13/6, and s spending 41·5 per cent. of the weekly income on t as compared with 17 per cent., which presumably a fair proportion for a family of this status. The penditure on food was 28 per cent. less than that cessary to purchase a physiologically adequate etary.

In Family No. 2 the man was a casual labourer the docks, earning 30/– per week. The rent paid s 13/6, which left 16/6 for the family for the week, though according to the man-value of 2·93, 20/6 as the minimum amount necessary for food alone. he family spent nothing on fuel, clothes, or other ems, and was in debt 5/8 at the end of the week. ch a man could not possibly do his heavy muscular ork without adequate food, and the expenditure 45 per cent. of his weekly income on rent made ebt inevitable.

Two budgets are shown for Family No. 3, the first hen the man was employed and the second when he as on unemployment relief. The rent of 10/– was 2 per cent. more than this family could afford, and he money spent on food was 47 per cent. less than he minimum necessary expenditure. I understand hat the wife has now broken down in health.

Family No. 4 shows a more satisfactory budget. he expenditure on food is substantially the amount heoretically essential according to the scale shown n Table II. Rent represents 23·9 per cent. of the eekly income, as compared with 17 per cent. calcuated on the Cost of Living data, but this expenditure on rent is reasonable, for in this family it did not entail the cutting down of essential expenditure on ood.

The number of family budgets quoted in Schedule B is, of course, too small from which to draw any general conclusions, but in so far as they are the actual budgets of working-class families in receipt of very limited incomes, it is worthy of note that the mean weekly expenditure on rent amounted to 34·7 per cent. of the total weekly income, or twice the percentage of 17, on which the Ministry of Labour bases its present calculation of the Cost of Living Index.

If a family undertakes such a fixed weekly commitment as rent, and then finds by bitter experience that insufficient money is left for the provision of adequate food, on the physiological minimum basis of 7/– per man-value per week, it is inevitable that debt or breakdown in health or both will follow.

EDUCATIONAL AND ADMINISTRATIVE ACTION.

It appears, therefore, that some educational and administrative action should be taken to prevent such family misfortunes, or at least warn the working-class public against such probabilities. There is little doubt that welfare and social workers could interest mothers in family budgets if they had at their disposal such data as shown in Table II. above. They could easily work out the minimum cost of food per family per week and tell the mother what money she should set aside for the purpose, and what amount should reasonably be allowed for rent and other items, but it must be made quite clear that food must be the first consideration in deciding whether any increased fixed weekly commitment, such as the rent of a new house, is justified.

I feel sure that some administrative measures are also desirable because families may be anxious to take new houses, and be allowed to commit themselves to weekly rentals or instalments which render the proper feeding of the family an economic impossibility.

The need for proper food and the minimum cost of adequate food should be clearly understood. Whatever may be the urgency for housing undertakings paying their way, it is in bad business from the national health point of view if such can only be achieved at the expense of family health.

Officials, whose duty it is to let council or other dwellings, should be conversant with some such scale as Table II., and on inquiry from a prospective tenant as to his weekly income and size of family, be prepared to say whether or not such a fixed weekly commitment as the rent or instalment on the particular dwelling is justified. It should be the recognised duty of such an official to refuse to let a dwelling unless he is satisfied that the weekly rental will not make it impossible for the family to purchase adequate food on the basis of 7/– per man-value per week. Moreover, sufficient money to cover reasonable expenditure on other items such as clothes and fuel must remain after deducting the cost of food and rent from the weekly income.

No doubt further inquiry in London and elsewhere will be needed before the necessary measures can be taken, but in the interests of the health of the working-class community it is essential that such inquiries should be followed by educational and administrative action.

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MEDICINE AND THE LAW.

Unregistered Practitioner and Death Certification.

"WHAT exactly does this registration as a medical practitioner mean?" The asking of this question by the foreman of a coroner's jury shows how widespread is the popular ignorance as to the relative powers and qualifications of registered and unregistered practitioners.

The Craven coroner, Mr. E. Wood, was holding an inquest at Barnoldswick, Lancs, in a case where the deceased having been attended by an unregistered practitioner, no death certificate was forthcoming. The deceased, a woman 40 years of age, was attended last November by a registered practitioner, Dr. J. W. Pickard. On Feb. 12th, being ill again, she called in an unregistered doctor practising at Preston. He visited her again on the 17th and 19th; on this last date the patient's husband decided to call in Dr. Pickard again; the unregistered doctor was informed of the intention and apparently approved. Dr. Pickard attended the patient on the 19th and found her very weak, "having a certain amount of pyrexia and seeming to be very dazed." He called again on the 21st; according to the husband, Dr. Pickard did not then see the patient as she was asleep; he told the husband that, if the unregistered doctor was going to attend the patient, he could not himself do so. The unregistered doctor attended her on the [illegible] *knowing that she had been attended by an unregistered practitioner." It was at this point that the foreman asked his question about the meaning of registration. Dr. Pickard, in answer, briefly explained the system of medical education, qualification, and registration under the supervision of the General Medical Council.*

Earlier in the proceedings the husband had stated that his wife had special confidence in the unregistered doctor and would not have called anyone else in had he always been available. The coroner explained that, however able this doctor might be, he could not issue a death certificate; "the public must understand that in the event of death an inquiry must take place." No registered practitioner, the coroner added, will attend a patient if he knows that an unregistered doctor is called in. "I am not holding a *brief for* [illegible] but Dr. Pickard would not have *been justified* [illegible] death certificate *in this case." The* [illegible] have given *useful publicity to* [illegible] abilities *of the unregistered* [illegible] *sign a death certificate* [illegible] *suppose that the public* [illegible] *would desire the* [illegible]

[illegible]

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The health of the guests was proposed by . THOMSON, who stressed the part played and e influence exerted by Dr. Watts Eden in promoting e smooth and uneventful arrival of the two new tions. His attitude throughout had been aracterised by the kindly solicitude and confident timism which were valuable assets on anxious casions. The name of Sir Robert Jones was known l over the world, and largely owing to his achieve-ents and energy the science of orthopædics had en raised from being the happy hunting-ground of educated bone-setters to what was perhaps the ost progressive branch of surgery to-day. r. Edwards, the Secretary of the Society, had en guide, philosopher, and friend, and might be scribed as the "silent gear-box" of the Society— d a preselective gear at that. Finally, Dr. Thomson elcomed the presence at the dinner of so many dies, who were naturally attracted by sections ill in their infancy.

Sir ROBERT JONES, in reply, wished every success the two new sections and the Society and was onfident that in giving his good wishes he was etting on a certainty. As he understood that a azz-band in the near vicinity was whetting its nstruments of torture, and as he firmly believed in cientific manipulation of the limbs for the develop-ent of the health of the body, he declined to keep hem any longer from health-giving exercise.

A large number of the guests then went to the all-room placed at their disposal by the management.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

WORK OF THE LOCAL APPOINTMENTS COMMISSION.

IT will be remembered that under the authority of the Local Authorities (Officers and Employees) Act, 1926, local authorities are bound to appoint o offices in their service only such persons as have een recommended to them for the purpose by a ntral body, the Appointments Commission. In ch case the Appointments Commission nominates person to be appointed, so that in effect the ointments rest with the Commission and not with local authorities. The Commission normally on the advice of a selection board, which is made l hoc for each appointment or group of appoint- s of a similar nature, of persons with special dge of the duties to be performed. As regards appointments it is recognised by everyone quality of the candidates for such offices of dispensary medical officer has materially d since the present system was established. candidates formerly were wont to rely n their local and family influences, they now that qualifications and evidence of experience important. As a result, the public medical are attracting a better class of candidates than formerly. In 1928, after some two years' experience of the working of the Act, the Dáil nominated a select committee to inquire and report whether any amendment of the Act was desirable. In February, 1930, the committee submitted its report, which contained several recommendations; some suggesting minor amendments of the Act, and others merely changes in procedure. The recommendations had the general approval of the medical profession, and some disappointment has been caused by the fact that no action was taken on the report. With a change of Government it is hoped that the report may now receive consideration. A rumour, however, is being circulated in the press to the effect that the present Government are considering altering the Act in an important particular. It is said that it is proposed to provide that the Appointments Commission should forward three names instead of one in each case to the local authority, the final choice to rest with the latter. Medical opinion is definitely against such a proposal, which is regarded as retrograde. It is pointed out that the local authority is not competent, as are the selection board, to estimate the value of professional qualifications and experience, and in so far as a local authority exercises any choice it is likely to be influenced by considerations which should be extraneous. Moreover, the general tendency of all the reforms in the public medical services in recent years has been toward centralisation, and toward making a transition to a State service easy. To restore the power which was taken from the local authorities six years ago is a reversal of this tendency.

HONORARY FELLOWS OF THE ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

Last Saturday evening the two recently elected honorary Fellows of the Royal College of Physicians of Ireland were admitted to the College by the President, Prof. T. G. Moorhead. They are Sir Almroth Wright, F.R.S., and Mr. Edward Stephenson, chief medical adviser to the Department of Local Government and Public Health of the Irish Free State. After the ceremony of admission the President of the College, who is also President of the Royal Academy of Medicine in Ireland, entertained a large number of the Fellows of both bodies and several distinguished guests to dinner.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified: Surg. Lt.-Cmdr. H. W. Strong to *Pembroke* for Gt. Yarmouth Hospital. Surg. Lts. G. A. Miller to *Stuart* and *Kempenfelt*; J. G. Currie to *Rodney*; E. H. Rampling to *Renown*; W. W. Simkins to *Douglas*; and F. W. A. Fosbery to *Ladybird*.

Surg. Lt.-Comdrs. (D). F. W. Watt to *Malaya* and T. Hunt to *Effingham II.*; Surg. Lt. (D). F. J. Goldsworthy to *Ganges*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. W. F. Lascelles to be Surg. Lt.-Comdr.

R.A.M.C.: TERRITORIAL ARMY.

Lt. A. A. Eagger to be Capt.

Supernumerary for service with the O.T.C.—Maj. C. H. Budd to be Lt.-Col., and to comd. the Med. Unit, Cambridge Univ. Contgt., Sen. Div., O.T.C.

INDIAN MEDICAL SERVICE.

Capt. G. C. Phipps, from R.A.M.C., with seniority, to be Capt.

Lt.-Col. S. W. Jones retires.

R.A.F. RESERVE OF AIR FORCE OFFICERS.

Flight-Lt. J. J. Clarke is transferred from Class D (ii) to D (i).

20th and 21st; on the 22nd she died. Asked by the coroner at the inquest to express an opinion as to the cause of death, Dr. Pickard said that, having heard the reports of the county analyst (who had analysed the medicines administered to the patient) and of the county pathologist, he was prepared to suggest the cause as "heart failure resulting from exhaustion due to menopausal mania." He did not think her life could have been saved. The foreman of the jury asked Dr. Pickard whether he would have given a death certificate if he had known that a local doctor had been called in. The witness replied, "if I had known sufficient of her and what medicine she had been given, I should have been ble to give a certificate; as I understand the law, should not have been entitled to give a certificate knowing that she had been attended by an unregistered practitioner." It was at this point that the foreman asked his question about the meaning of registration. Dr. Pickard, in answer, briefly explained the system of medical education, qualification, and registration under the supervision of the General Medical Council.

Earlier in the proceedings the husband had stated that his wife had special confidence in the unregistered doctor and would not have called anyone else in had he always been available. The coroner explained that, however able this doctor might be, he could not issue a death certificate; "the public must understand that in the event of death an inquiry must take place." No registered practitioner, the coroner added, will attend a patient if he knows that an unregistered doctor is called in. "I am not holding a brief for either side, but Dr. Pickard would not have been justified in giving a death certificate in this case." These proceedings will have given useful publicity to one of the very few disabilities of the unregistered doctor, namely, his inability to sign a death certificate. There is no reason to suppose that the public, when the point is appreciated, would desire the law to be changed.

Tobacco Blindness.

At the Liverpool Assizes lately an acetylene welder sued his former employers for damages for personal injuries alleged to be caused by their negligence or breach of duty. The plaintiff complained that he suffered from nicotine poisoning as a result of welding plates on to moulds which had been used in tobacco factories and that his eyesight was temporarily affected. In support of the claim a civil engineer stated that in rewelding the tobacco moulds the application of an oxyacetylene welder would volatilise the nicotine and produce noxious fumes. The defendants contended that the tobacco blindness was due to excessive smoking and had nothing to do with the man's employment.

The jury awarded the plaintiff £35, a result with which Mr. Justice Charles said he profoundly disagreed. He deferred judgment in order to consider which scale of costs should be allowed, but subsequently he awarded costs on the High Court scale. The defendants, he said, had treated the claim from the beginning as a matter of importance and dealt with it as a High Court case, calling witnesses of high distinction in support of their contention. Presumably the learned judge meant that this course committed the plaintiff to corresponding effort, but it seems hard that the defendants should be penalised for having obtained expert assistance in resisting a claim with which the judge himself clearly had little sympathy.

PHYSICAL MEDICINE AND RADIOLOGY:

A JOINT CELEBRATION.

A COMBINED dinner of the Sections of Physical Medicine and Radiology of the Royal Society of Medicine was held at Claridge's Hotel, London, on Friday, April 15th. The dinner was in celebration of the formation of these two sections last autumn, and the chair was taken in dual form by Dr. F. G. Thomson, President of the Section of Physical Medicine, and Prof. J. M. Woodburn Morison, President of the Section of Radiology. The guests of honour were Dr. T. Watts Eden, President of the Society, and Sir Robert Jones, who had delivered an address (reported on p. 885 of this issue) to the Section of Physical Medicine at its meeting earlier in the evening.

The health of the two sections was proposed by Dr. WATTS EDEN, who said that, as they had come into existence during his presidency, he stood to them in loco parentis. If he could more appropriately be regarded as having presided over their birth, he liked to remember that the word "obstetrician" meant by derivation "one who stood by"—often enough until the morning! He had never known an affair of twins proceed more smoothly and expeditiously or with less anxiety to the official watcher. The new sections owed much to the wise and unobtrusive leadership of the two presidents and to the spirit of mutual coöperation manifested both by the Council and by the general body of members of the old sections, who had not hesitated to scrap the "old bottles" when it had become obvious that they would not hold the "new wine." He entertained the most optimistic view of the prospects of the new sections. Physical medicine was a time-honoured branch of medical work—witness the balneological treatment at Bethesda—while radiology was the bright young thing of modern medicine. The present seemed to him a particularly favourable opportunity for the apostles of physical methods of treatment. We lived in a drug-ridden age and, while physical medicine did not exactly advise us to "throw physic to the dogs," it did undertake the all-important mission of proclaiming the healing virtues which resided in Nature. The most striking thing about radiology was the phenomenal rapidity of its growth. In radiophotography were fulfilled the prophetic words: "There is nothing covered that shall not be revealed." It was hardly too much to say that radiology had held almost the whole field of medicine and surgery in fee, save perhaps, psychiatry—and everyone would hope that radiologists would stop short of revealing the emotions. He submitted that the position of radium and X rays as therapeutic agents had yet to be determined, and assumed that the position of radiotherapeutics would be one of the chief preoccupations of the new section. And he reminded the audience that the triumphant march of radiology has been secured at the cost of the lives of men who had counted those lives as of little worth in comparison with the advancement of their science.

Prof. WOODBURN MORISON, in reply, welcom steady progress made in physical medicin radiology and the full recognition accorded l Royal Society of Medicine to the changes tha resulted. The two new sections had much in co and already they ranked twelfth and thirteent the strength of their membership, among tl illi which are found in these children's stomach-tents human or bovine? Dr. Collis has not yet ed his cases. Does the presence of tubercle illi in stomach contents in cases of erythema dosum necessarily prove that pulmonary tuberosis also is present? Dr. Collis tells me that his cases there is X ray evidence of this in the gs, but in his letter he hesitated to label these ildren as suffering from pulmonary tuberculosis.

One of the points of my article was to show that must not confuse pulmonary tuberculous *infection*, ich may be frequent and benign, with pulmonary berculous *disease*, which is rare and grave. I ink here Dr. Collis and I are on common ground, d I agree with him that the boundary between the o conditions may have to be defined. In conasion may I remind Dr. Collis that he is working here the most rare conditions in children are mmonplace; while house physician in the same spital some years ago I had the opportunity of serving a new case of congenital hypertrophy of e pylorus approximately every week; yet to the ulk of the profession this condition also must main a medical curiosity.

I am, Sir, yours faithfully,

F. J. BENTLEY.

he County Hall, London, S.E., April 14th, 1932.

TOXIC EFFECTS OF PHENOLPHTHALEIN.

To the Editor of THE LANCET.

SIR,—I have read with interest in your issue of pril 9th (p. 803) Dr. Phillipps's letter on the toxic ffects of phenolphthalein, and the numbers of perient proprietary preparations which now contain t. It is often a matter of extreme difficulty for the kin specialist who probably sees the most cases of oxic eruptions to elucidate the cause, and as new preparations are being constantly put on the market and prescribed it is a practical impossibility to be acquainted with all of them, and to have a knowledge of their ingredients.

I have records of three cases in which I ascribed the symptoms to the presence of phenolphthalein in a trade preparation. In one of these the toxic symptoms were as acute as Dr. Phillipps describes in his own case. This patient, a woman of 65, came on a visit to her daughter after an operation for removal of the breasts. Two days after her arrival she developed an acute erythematous and œdematous eruption, involving mainly the neck and upper part of the trunk. The itching was excessive, and her discomfort intense. As she was a Jewess of strictly orthodox type, the diet was naturally suspect; it was carefully investigated, without result. No medicines were being taken, except pil. alophen., which her surgeon had advised when an aperient was needed. She had taken this pill after her arrival. On suspension of the drug the symptoms rapidly responded to treatment. Pil. alophen. contains phenolphthalein, and though I had not previously diagnosed a case of phenolphthalein poisoning, I ascribed the symptoms in this case to its use.

In the other two cases the toxic effects were not so extreme as in this case, but as the symptoms were relieved on cessation of the drug they seemed clear cases of cause and effect. One of the cases had been ordered pil. alophen., the second case a paraffin preparation containing phenolphthalein. In both the main symptom was excessive itching, and in one case the irritation was so severe that she had produced numbers of sores by scratching. The eruption was difficult to define in these cases, as it varied in type, showing occasionally small ill-defined erythematous patches, or a few scattered papules lichenoid in type. Both were women of over 60 years of age, and the cases are of interest in view of the large number of cases in which pruritus is the main symptom, and for which no cause can be discovered.

I am, Sir, yours faithfully,

London, W., April 14th. ELIZABETH HUNT, M.D.

PSYCHOLOGY AND MEDICINE.

To the Editor of THE LANCET.

SIR,—In an interesting review of Dr. Alfred Adler's latest book in your last week's issue, the writer, who conceals his identity not too impenetrably under the initials F. G. C., claims Prof. Einstein as an adherent of Adler's system of individual psychology while quoting his bon mot that Adler is the Sancho Panza to Freud's Don Quixote. Now this epigram was the reply which Einstein gave to my question what he thought of Freud and of Adler, at Oxford last summer, when we were dining together at Christ Church. He also expressed the view as regards Freud's theory of infantile sexuality that "life couldn't be so complicated as all that." But he hastened to add that he could not speak with any authority on these matters as he had no special scientific acquaintance with the underlying facts. Here spoke the man of science, for it is really impossible to decide the validity of the claims of these contending schools of psychology without a wide experience of the facts, gained by patient and prolonged analyses of individual cases.

It is my own experience, after prolonged and deep analyses of many cases of psychoneurosis, that both theories, each in its own sphere, illuminate the results, and that a satisfactory explanation can only be gained if both points of view are retained. But this involves the rejection of much of the explanatory detail of each, and the incorporation of ideas from the recognised teachings of academic psychologists such as Ward, James, McDougall, Myers, and others. In other words, all these investigators are to be regarded as separate and original contributors to one single science, the science of psychology. Such a view is not eclecticism (a word that only has meaning, and a bad one, in philosophy), but the generally accepted view as to the nature of all genuine sciences.

If, on the other hand, psycho-analysis and individual psychology are set over against one another as mutually incompatible schemes of psychological thought, their fate will be that of the Kilkenny cats, and general psychology will have to get along without them. I am, Sir, yours faithfully,

Harley-street, W., April 16th, 1932. WILLIAM BROWN.

"LOW-SEGMENT" CÆSAREAN SECTION.

To the Editor of THE LANCET.

SIR,—Your second leading article of last week is entitled Low-segment Cæsarean Section. That operation has been called by many names, but is not this new one apt to lead to confusion? Lower segment is the term which has been used for generations and should, I think, still be used, since some operators make the incision for the classical operation low down in the upper segment—for example, Mrs. Ivens-Knowles, whose excellent results you give, though

CORRESPONDENCE

ECONOMY IN THE PUBLIC HEALTH SERVICES.

To the Editor of THE LANCET.

SIR,—There can be few in the medical profession who do not think that the national spirit of extravagance, now generally admitted, exists in some degree in branches of our social services. There is a tendency for luxuries to be classed as necessities for the public health, and my feeling is that much expenditure might be saved without the public welfare suffering. May I suggest some lines on which economy might be exercised. I will deal first with economy in administration, and then with economy in public health institutions.

In my experience of medical and health administration in peace and war, extending over 20 years or more, I have found a constant tendency (of myself and others) to over-staff. He who desires a reputation for efficiency will staff his office for the maximum amount of work at any period of the year, rather than for the average; not an unnatural tendency, as it contributes to efficiency at all times, freedom from errors, punctuality in returns, and peace in the office. If, however, a compulsory reduction is made, it is often surprising how little reduction in efficiency is noticeable. Reports a shade less elaborate, a little extra work, a little overtime at certain periods, a little less comfort for everybody—but the work is done. That a layman, or committee of laymen, is capable of estimating what the staff should be is, I think, seldom possible. It requires a medical man with experience. Yet it is my experience that the specialist or expert carrying out the duties at the time is not the person who should have the final word as to the number of his staff. In this respect in the Army the arrangements are good, for every specialist has his immediate chief, possibly not an expert but experienced. He can view the specialist's probably not unprejudiced requests with an independent eye and a due sense of proportion. Two other tendencies, which I need not elaborate, contribute to overstaffing: the first is sitting at a desk when one should be visiting the area; the other, the issue of too elaborate returns. Experience, especially in war-time, has shown me that to obtain good results it is not always necessary to have the most expensive apparatus or to follow the most expensive methods. To give a single example, it does not require a large fixed bath to make a man clean, a small tin one would do this as well. I have learnt not to confuse health necessities with luxuries and comforts.

Of institutions I do not claim to have more personal experience than comes to most members of the profession. The opinion of general practitioners on some of them would be instructive. What do they feel about the value of health visitors as a public health institution; does the public get full value for the money spent? And then school medical work; might it not be more practical and possibly less expensive to utilise the general practitioner who is the family doctor as well. At present the school medical officer only sees children at school and rarely when ill; the practitioner does not see them at school and rarely when well? Would not a system by which the children's parents render special certificates drawn up by their own doctor at fixed periods answer as well or better? Take infant welfare centres. At one period when in the Army I had the supervision of several of these. The actual amount allowed for expenditure in a centre was £5 a year; medical officer, nurse (if available), and accommodation cost nothing. A medical inspection room was utilised; failing that, a disused barrack room. Comparison with the expense of civil centres is therefore difficult. Although the comfort of the medical officer may have suffered to some extent by lack of accessories, I doubt if they affected the success of the centre. The personality and ability of the medical officer was indeed the chief factor. It is possible that sometimes the comfort of the staff is overdone; this is not a noticeable failing in the Army.

These are a few of the lines on which economy might be exercised; some others have been mentioned previously in your columns.[1] I do not think that they are exhausted. It may be asked whether there is any constructive idea in my mind. I consider that the medical profession as a whole has not enough share in the administration of public health. apart from the executive work. Laymen are fond of dabbling in public health, some with success, others for various reasons run amuck. Municipalities and county councils in their public health work should be well leavened with general practitioners, whose knowledge, experience, and practical acquaintance with many of the problems arising should make them efficient in checking unnecessary expenditure. Their help too would be invaluable to the health medical officer. But they stand aloof from public health administration.

I am, Sir, yours faithfully,
W. F. TYNDALE, M.D. Lond., D.P.H.

Bishopthorpe, York, April 18th, 1932.

PULMONARY TUBERCULOSIS IN CHILDHOOD.

To the Editor of THE LANCET.

SIR,—It is a pity that Dr. Collis in your issue of April 9th did not explain his point in greater detail. The matter really is one of considerable interest. My article dealt with pulmonary tuberculosis only, and I stated that this disease, associated with tubercle bacilli in the sputum, was rare in children. I also said that this combination was a grave one, few such sufferers surviving at the end of five years. I quoted figures. May I repeat that in the year 1930 only 95 children under 15 years of age were certified as dying from pulmonary tuberculosis in the whole of London. If, as Dr. Collis infers, wider search for the bacilli will demonstrate "a surprising number of positive cases," I, personally, would have expected that deaths would be more numerous than is at present shown by the returns. But Dr. Collis tells me that he thinks pulmonary tuberculosis in which there is either no obvious expectoration or in any event no tubercle bacilli present in it, but in which tubercle bacilli presumably from swallowed sputum are found in the stomach contents, may be not only comparatively common, but benign.

If Dr. Collis can establish the frequency and favourable outlook of such a condition it will be of much interest scientifically, but I do not think it will have any immediate application from a public health point of view; our concern must remain chiefly with the grave disease where tubercle bacilli are found in the sputum, and we need not worry about children who are apparently getting well at present without our aid. But further work needs to be done on this controversial subject. Are the tubercle

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[1] THE LANCET, 1931, ii., 649, 700.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

PUBLIC HEALTH SERVICES.

IN the House of Commons on Tuesday, April 12th, the motion that the Speaker do leave the Chair the House going into Committee of Supply on the il Estimates, and Estimates for the Revenue partments, 1932,

The Medical View.

Dr. MORRIS-JONES moved the following amend-ent:—

> "That this House appreciates the progress made by al authorities since the passing of the Local Government t of 1929 in coördinating and improving their public alth services and, while recognising the need for economy local expenditure, is of opinion that the development these services should steadily continue as and when rumstances permit."

e said the Local Government Act of 1929 in its ope and magnitude, in the vast number of interests hich it touched, and in its effects on the prosperity d well-being of this country, was one of the greatest easures ever passed by that House. The Act had S clauses and voluminous schedules, and the ovisions dealing with the public health services one occupied many pages. One of the big achieve-ents of the Act was the transfer of the poor-law rvices to the present authorities. The new authorities o years ago succeeded in taking over their new ities without failing to relieve any known case of stitution. He questioned if any other country in e world could have achieved such a change in like anner. The main objects of the public health rovisions were to achieve eventually improved and ficient public health services in this country, and the second place to secure economy. Looking ack over the records of the last 40 years he found at expenditure on local administration, which was 36,000,000 in 1891, was to-day close on £300,000,000. nd a very large part of that sum came under the ead of public health. Schemes were supposed to e submitted under the Act of 1929 for the absorption f poor-law institutions. Other institutions were to e altered and made more adaptable to modern onditions. Some were to be declared redundant, nd some were to be used for a different purpose. hat movement was undoubtedly long overdue in he interests of public health. He understood that n the London area very much progress had been nade in dealing with poor-law institutions. He aw from the figures of the last report of the Minister f Health that 37 poor-law institutions had been ppropriated for use as hospitals, and nine of them or use as children's hospitals or convalescent homes.

THE TRANSFERRED HOSPITALS.

The case in the country was far from satisfactory. Only 19 out of 79 county boroughs had submitted schemes for the reclassification of their poor-law nstitutions, and not one county council outside London had been able to appropriate a single poor-law nstitution for the purpose of a general hospital under the control of the local authority. The intention of the 1929 Act was that all local authorities should, as far as possible, provide all the assistance necessary on medical and public health grounds under powers which they possessed under other Acts than the Poor-law Acts. The Local Government Act empowered them to make a declaration that such-and-such health services should be provided otherwise than by way of poor-law relief. Were the local authorities making these declarations? Had any county council or county borough yet transferred the functions of the public assistance committee to the public health committee or to the maternity and child welfare committee? He did not suggest that they should have too much departmentalism in the public service. Medical officers in charge of such services should work as a team. There was permission under the Act for medical officers to consult with the specialists of the large public hospitals. He was afraid that so far not much in the way of consultation was going on. He had no doubt that the tendency of the Ministry of Health was to get whole-time medical officers under their control as far as they could. He was a great believer in the general medical practitioner, and he hoped that the Minister would discourage any tendency to relegate the treatment of disease to officers of the Ministry. Some local authorities were suggesting doing away with the old poor-law medical officer. He would be very sorry if that came about. One or two authorities had suggested that visits to patient's homes should be made by their own institutional medical officer, and one authority had proposed, or had had under consideration, the setting up of a panel something like that under the National Insurance Act whereby a sick person in receipt of parish relief would be able to select any doctor from the panel in the neighbourhood. He did not think that that would lead to efficiency or economy. The old parish doctors contained among their class the ablest and most conscientious general medical practitioners in the country, who regarded it as a privilege and a pride to look after the poor. These doctors were the only medical men in many areas, and they attended both rich and poor. Under the Act a doctor could only be relieved of his office with the consent of the Minister, and he trusted that the Minister would reluctantly give his consent, unless there were medical grounds for doing so.

ECONOMY AND EFFICIENCY.

The second main function of the Act was national economy. He would like to know what effect the crisis of last September and since had had in regard to public health services, and whether the Minister considered that there was a reasonable standard of efficiency and progress maintained without excessive or unreasonable expenditure. While he took the view as a medical man that expenditure on health services must not be curtailed at the cost of efficiency, he also held the view that it must be examined thoroughly in view of the state of the national Exchequer. Looking into the figures of the reductions in rates, for instance, he found that local authorities had been able to arrive at a fictitious reduction in many cases, but that owing to increased assessments the amount actually expended by many local authorities at the present time was greater in 1931–32 than in the previous year. He did not think that the present House of Commons was reactionary in regard to public health. He felt sure that it would support the Minister of Health in any measures that might be required to retain for this country a model public health service.

Lieut.-Colonel FREMANTLE, in seconding Dr. Morris-Jones's amendment, said there were four lines of thought in considering the Local Government Act in these difficult times. First, they were all agreed that they must maintain the efficiency both of their institutions and their personnel. They could not allow any economies to reduce that. In the second place, in view of the necessity for economy, they wished to make better use of the present facilities by reorganisation. In the third place, they ought to revise the traditions or the groove into which administration might have sunk in the light of experience. Fourthly, they wished to advance slowly on an agreed path. They had to face the fact that they could not as yet measure the results of the Local Government Act by any definite figures, although the late Minister of Health and others supporting him tried to measure their efficiency by the decline in the mortality rates. The figures for 1931 were definitely disappointing. That was you wrongly date her book on Cæsarean Section, which was published in 1931. Your article states :—

> "H. R. Spencer has reported 120 cases, many of which were infected before operation, with four deaths. This should be compared with the 1·23 per cent. mortality at the Chicago Lying-in Hospital in 895 cases of the low-segment operation."

May I set out a few facts which render such comparison difficult ? In my little book on Cæsarean Section (1925) I have given in detail every one of my 120 cases of Cæsarean section in hospital and private, over a period of 32 years, from 1892 to 1925 (I have since had one private case, successful to mother and child). The Chicago Lying-in Hospital cases are comparatively recent ; were operated on by many operators, and not all their cases of Cæsarean section are given. In 1925 J. B. de Lee published 136 cases of the classical operation at that hospital, with seven deaths, but he did not give details of the cases. But he did state that in 24 of the cases the wound suppurated. My cases were not discharged before the 24th day ; 59·8 per cent. of the Chicago cases were discharged by the 14th day, one on the 8th. And what about embolism after the lower-segment operation ? Phaneuf reports 80 cases of that operation, with six deaths, and three cases of pulmonary embolism, one of which was fatal. Has embolism ever occurred with such frequency after the classical operation ?

In my book I appealed for a complete and detailed record of cases in order that the relative merits of the classical and the lower-segment operation may be decided. The 895 Chicago cases of lower-segment operation (which is unsuited for the graver cases of cancer and tumours) are no answer to that appeal.—I am, Sir, yours faithfully,

HERBERT R. SPENCER.

Bickenhall Mansions, W., April 16th, 1932.

MARMITE IN SPRUE.

To the Editor of THE LANCET.

SIR,—In your issue of April 16th (p. 829) Dr. Janet M. Vaughan and Dr. Donald Hunter write on marmite in the anæmia of idiopathic steatorrhœa, and (on p. 837) is reported a contribution by Dr. Lucy Wills in the discussion at the Section of Tropical Medicine of the Royal Society of Medicine on the megalocytic anæmias of the tropics. May I recall that in the opening paper of a discussion on the treatment of sprue at the same Society on Dec. 3rd, 1923, I mentioned that I had for long used marmite in the treatment of sprue, nearly always complicated by anæmia, and recorded two cases of severe sprue who gained a pound a day for 14 and 21 days respectively, accompanied by great general improvement, on marmite treatment at the Hospital for Tropical Diseases, London, where I am still using it in such cases. Colonel W. P. Macarthur in the same discussion mentioned that he had independently come to the same conclusion, and B. K. Ashford, of Porto Rico, has also repeatedly laid stress on the importance of an unbalanced diet in predisposing to sprue.

I am, Sir, yours faithfully,

London, April 17th, 1932. LEONARD ROGERS.

ROYAL NORTHERN HOSPITAL.—Last year the in-patients numbered 6162, an increase of 756, and 369 of the 417 beds were in daily occupation. Out-patients' attendances numbered 339,579, an increase of 30,000. The deficiency on the year was just under £3000, as compared with nearly £10,000 in 1930. It has been necessary to close two wards containing 46 beds, the debt now being £121,328, of which over £65,000 is in respect of buildings and equipment. The private patients' wing is entirely self-supporting.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 9TH, 1932.

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox 70 (last week 95) ; scarlet fever, 1356 ; diphtheria, 726 ; enteric fever, 12 ; acute pneumonia (primary or influenzal), 1319 ; puerperal fever, 41 ; puerperal pyrexia, 96 ; cerebro-spinal fever, 74 ; acute polio-myelitis, 7 ; encephalitis lethargica, 15 ; dysentery, 13 ; ophthalmia neonatorum, 98. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 12th–13th was as follows: Small-pox, 117 under treatment, 6 under observation (last week 121 and 4 respectively) ; scarlet fever, 1419 ; diphtheria, 1390 ; enteric fever, 11 ; measles, 2712 ; whooping-cough, 425 ; puerperal fever, 30 (plus 16 babies) ; encephalitis lethargica, [illegible] "other diseases," 121. At St. [illegible] were 13 babies (plus 6 mothers) [illegible] um.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 139 (66) from measles, 5 (1) from scarlet fever, 48 (10) from whooping-cough, 22 (6) from diphtheria, 46 (11) from diarrhœa and enteritis under two years, and 114 (19) from influenza. The figures in parentheses are those for London itself.

Dagenham and Willesden reported deaths from enteric fever. No great town reported as many as 10 fatal cases of influenza, Leeds standing highest with 8, and Bristol with 6. Leeds and Liverpool each reported 9 deaths from measles, Manchester 7, and Derby 5 ; but more than two-thirds of the measles deaths occurred in Greater London. There were 4 deaths from whooping-cough at Sunderland and at Birmingham.

The number of stillbirths notified during the week was 342 (corresponding to a rate of 46 per 1000 births), including 47 in London.

MEDICAL NEEDS OF SOUTH AFRICAN NATIVES.

Dr. A. J. Orenstein, president of the Medical Association of South Africa, speaking at the annual meeting of the Bridgman Memorial Hospital for Coloured People at Johannesburg on Feb. 25th, said that the economic position of the bulk of the natives is such that they are unable to pay for the medical attention they require. There had been, he said, talk of a national insurance scheme for natives, but even the relatively small sum which this would cost would be impossible for those in the rural areas, though the condition was slightly better in the towns. Work was done among the natives in the country by district surgeons, who were supposed to attend pauper patients. District surgeons, however, were few and far between, and their remuneration for attendance on paupers devolved on the local authority. The position, in Dr. Orenstein's opinion, is deplorable. At the end of 1926 it was found, in all provinces of the Union, that in the public hospitals there were 1803 beds for the use of natives. Half of these beds were divided among the three cities, and the average was one bed for 2000 persons. A conservative estimate for the needs of natives would be one bed for every 700 persons, and to provide even this low number 4000 additional beds would have to be found for part-paying or non-paying patients, and with capital expenditure and annual cost of maintenance the cost per annum would be roughly £500,000. He suggested an expansion of the existing hospitals, especially those run by private subscription. He also advocated more medical services for rural areas.

GRAND OPERA FOR BIRMINGHAM HOSPITALS.—Arrangements are being made for a week of grand opera at the Prince of Wales's Theatre, Birmingham, for the benefits of the city's principal hospitals. The whole of the scenery, properties, and wardrobes are being lent by the Covent Garden Opera Company. The General, the Queen's, and the Ear and Throat Hospitals will share the profits.

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Government Reply.

Sir E. Hilton Young (Minister of Health), replying t the debate, said that there had been a resolute tempt to represent that unwise restrictions were ing placed on the public health services in the terests of economy. For that suggestion there was shadow of foundation of any sort or kind. The st argument used in favour of that contention was misquotation of a Circular on economy issued at e time of the national crisis to local authorities. e words of the Circular were :—

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ESSENTIAL SERVICES.

He had taken pains to get an estimate of all the chemes of development in matters of public health efore the Ministry at the time of the oncoming of he effort for economy. These amounted roughly o £1,000,000 worth, and of that not more than 150,000 worth had to be abandoned as not essential. f the essential services he would put in the forefront t the present time the service of maternity and child elfare, and the service for dealing with the great courge of tuberculosis. They had now an important ew weapon in the fight against tuberculosis. Since he initiation of the new system of local administration, wing to the coordination of public assistance with ublic health services, they could now follow up cases hen they left the sanatorium. At the end of December, 1930, the number of beds available for he treatment of tuberculosis was 15,972 ; at the end f December, 1931, the number available was 17,609. There was no evidence there of relaxation of effort. At the end of 1931 the number of infant welfare centres n England and Wales was 3043, compared with 2935 at the end of 1930. The number of antenatal clinics n England and Wales at the end of 1931 was 1262, compared with 1101 at the end of 1930. As regards maternal mortality he knew that there was a scheme put forward under the late Labour Government for the service to which Mr. Lansbury had referred. but that scheme was typical of the complete lack of touch with realities in administration shown by the late Labour Government. It would have placed a burden on the country's finances of a nature which the country was totally unable to bear at the time. Nor was it well conceived to get the best possible use out of the public money required to finance it. But because that was a frank impossibility at this time did it mean that they were going to relax in the war on maternal mortality ? On the contrary, if they got rid of illusions they would be able to proceed in the most practical way to get the best use of the resources available. The Ministry had already sent a Circular to the local authorities for this purpose. There were services for promoting the welfare of mother and child before, at, and after birth, which local authorities could render, but they did not all render it. The Ministry was endeavouring to stimulate the local authorities to come up to the standard of the best, and make use of the powers which they already had. Further effort would be made to persuade those authorities which needed persuasion to strengthen their maternity services. Stress must be laid on the importance of educating the women themselves to take advantage of the services. Particular attention must be paid, of course, in the interests of economy to those areas in which the mortality among mothers was the highest.

PROGRESS OF COÖRDINATION.

The coördination of public health and public assistance was already yielding most valuable, interesting, and important results both in efficiency and economy. In the general scheme of the nation's finances there was no need for an immediate grip of parsimony in the public health services such as there was in some other national services, because there was a margin in the block grant for the development of the health services. When he spoke of the extension of the maternity services and the effort to secure a better standard among local authorities, he was relying upon the margin which was provided by the £5,000,000 increase in Exchequer money which was made available for local authorities at the time of the institution of the block grant system. That was one benefit from the new scheme. Another great benefit was the ability of the Ministry of Health to concentrate on its proper work as a clearing house of knowledge and information, and the source from which counsel and advice could proceed to keep the local authorities in touch with the best knowledge available for their service. The Ministry also had to be the staff brains of the whole national health services. Special inquiries had been carried out quite recently in the discharge of those staff functions into tuberculosis, cancer, and cerebro-spinal meningitis. Another bit of staff work which had been done at the Ministry of Health was in connexion with the important matter of nutrition. That was a modern science on which floods of fresh light were being cast every day, and it was difficult, even for the medical officers, to keep up to date with the latest information. In order to help them they had instituted a new standing advisory committee to collect the latest information on nutrition for the benefit of the medical profession and the public as a whole. The practical lesson of experience was that this was not very important for the middle and upper classes, which had a varied diet, but it was very important for the wage-earning classes, where diet was not so varied. The committee had brought out two reports, one on diet in poor-law children's homes, and the other on the vitamins, where the uninitiated could follow the natural history of these difficult subjects from vitamin A down to vitamin D, and even to vitamin E, and its function in promoting the fertility of rabbits.

HOSPITAL TRANSFER A SLOW PROCESS.

The classification of institutions, and in particular the transfer of hospitals from poor-law conditions to the new status of the general purposes hospital, was a problem which could not possibly be dealt with effectively in a short time. But he could say that the progress had been good and satisfactory, particularly in London. Sixty-eight institutions had been appropriated for special purposes following on a scheme of classification according to the last report. Since that report 11 more had been classified. There was nothing to complain of in the rate of progress there. The transfer from poor-law status to general public status in the case of hospitals was acting as a remarkable stimulus upon the institutions, since it made them, as it were, equals of the greatest and most famous hospitals in the land. It was the policy of the Ministry of Health to promote coöperation between voluntary and public hospitals in every possible way. The necessity of the voluntary hospitals as a part of our national scheme was recognised as an essential part of the structure. Both the voluntary hospitals and the public hospitals had their own useful fields of activity. He knew of no sense of hostility or antagonism between them, and there was no reason why there should be. The only rivalry was as to which could treat their patients best. The Ministry of Health must see that the

obviously not due to this Government, though it might be due in some part, if they could measure it, to the Local Government Act. The birth-rate in 1931 fell from 16·5 to 15·8, which was the lowest point yet attained, and the death-rate went up from 11·5 to 12·3, and infant mortality rose from 60 per 1000 to 66 per 1000. Fears had been expressed as to the future of our poor-law institutions, and they might have expected to see some decline in their efficiency as the result of the enormous task of transferring them to new authorities. He felt confident, however, that those fears had not been realised. Those who had worked professionally with the local authorities, or who were otherwise in close touch with their work, recognised that great advantages were accruing on the professional side of the work of those institutions.

ANOMALIES IN SMALL-POX ADMINISTRATION.

Take the appalling waste which arose from having *isolation hospitals all over a county*. He hoped the reorganisation under the Act would be carried on, because it would be of enormous advantage if they could bring it into effect in the next two or three years. As an extreme case let them take the provisions of small-pox hospitals. They all knew how inadequate had been the arrangements for dealing with a small-pox epidemic. It was quite clear that in the revision of the machinery for maintaining public health they must revise the vaccination laws and the whole of the vaccination machinery. To what extent was the transfer of powers under the Local Government Act preparing for such a division of the vaccination laws and their administration? He hoped that the county councils in taking over powers to deal with small-pox, sanitation, and vaccination would prepare sound schemes which would enable them to deal with the appalling anomaly which existed at the present time—this hypocrisy under which the country was supposed to have a system of compulsory vaccination when only one-third or one-fourth or less of the population now growing up were vaccinated.

VOLUNTARY HOSPITAL SYSTEM.

Another point they had to consider in developments under the Local Government Act was the threat to voluntary institutions—voluntary hospitals and voluntary agencies engaged in health work. The more they coördinated municipal work, and regularised the official system, the more difficult it was to fit in the voluntary system with it, and yet they all appreciated the enormous advantages of the voluntary system, where it was properly supported, in connexion with hospital work. Even the most extreme Socialist recognised that for the present the voluntary system must remain. It would be perfect madness to contemplate, even in the more distant future, any interference with the efficiency of voluntary hospitals and other institutions. They were constantly met by the statement that the work of raising money for voluntary hospitals and other institutions was degrading, and that they ought to be put on the rates. The advantage of the voluntary system was that those who gave to them generally helped to see that results were obtained from their contributions. Municipal hospitals generally had a much duller and less appetising air about them. The voluntary system was essential both to economy and efficiency. In London they saw the problem in its most acute form, though it was reflected all over the country. In London everything had been done by the officials to try and work in with the voluntary hospitals, and yet the voluntary hospitals felt that by degrees they were fighting a losing battle, and that it was more and more difficult for them to hold their own against the municipal side of hospital work. Perhaps the Minister of Health could reassure the House on that point.

LONDON MEDICAL SCHOOLS.

He had been in close touch with the 13 teaching voluntary hospitals in London, and they had been seriously perturbed by one fact. In the Local Government Act provision was made for a London Voluntary Hospitals Committee to be in constant consultation with the London County Council, but there were 150 hospitals represented on the committee, and the 13 teaching hospitals felt that they had not had their interests adequately considered. There was an idea that the London County Council were going to set up a central teaching hospital which would compete with the voluntary teaching hospitals which had been the foundation of British medicine. He did not believe that that was intended by the London County Council, but they were intending to carry out the splendid scheme introduced by the last Government but one for a post-graduate teaching centre in London. As regarded ordinary teaching, there was a definite part to be played by the voluntary hospitals and a definite part to be played by the poor-law hospitals. How should those two be brought together? There must be some clear understanding of their relative functions. *On the one hand* there were the voluntary hospitals, which must do the main work of teaching and research, which he did not think could be properly carried out by municipal institutions. The municipal hospitals ought to be working in coöperation with the voluntary teaching hospitals with a view to effecting greater economy. The municipal hospitals had a large range of clinical quarters in their medical schools which should be of great advantage to the rising medical profession and the nursing profession. The ordinary voluntary hospitals took one-fifth of the cases in London, and they would willingly help the poor-law infirmaries if arrangements could be made to do this. That would be an advantage to the hospitals and to the municipal institutions. It would also lead to a great economy, and help coöperation between municipal and voluntary hospitals which they all desired to see. There was a great future for coöperation between the laboratory services. They had been looking forward to the first revision of grants under the Local Government Act. Grants were made for three years as from April 10th, 1930, to 1933, and then the new bodies would *start to receive* grants for four years and afterwards for five years. He hoped it would not be necessary to reduce the grants, and that the power given in Section 104 of the Local Government Act would be found useful in bringing local authorities up to the mark.

After further debate,

The Opposition View.

Mr. LANSBURY said that at a period like the present it seemed to be absurd to say that they ought to economise on any public health service. In spite *of national need and money stringency* he maintained that a period of great unemployment was exactly the time when there ought to be more money spent on public health services. The London County Council and other local authorities had carried economy in health services much too far. He felt certain that when they received the next year's reports of the medical officers of the Ministry of Health, the Board of Education, and the London County Council they would show a very marked difference in the physique of the children. Mr Greenwood, when he was Minister of Health in the late Government, intended to introduce a Bill to deal with the problem of maternal mortality, but he was told that he could not bring it forward because of financial stringency. Was there any possibility of that particular Bill being passed this year? Every voluntary hospital in London was more or less in a bad way, and they were living from hand to mouth. On the education side some of their work was magnificently done. In regard to the poor-law hospital they were doing a fine work without any sort of stigma of pauperism about it at all. They were trying to create, although it did not exist yet, a real municipal health and *hospital service*. He wished to see a national medical service throughout the country, but meanwhile he would like to see, especially in ondon, real coöperation and coördination in the ork of municipal and voluntary hospitals.

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Mr. LANSBURY said that at a period like the present it seemed to be absurd to say that they ought to economise on any public health service. In spite of national need and money stringency he maintained that a period of great unemployment was exactly the time when there ought to be more money sp on public health services. The London Count Council and other local authorities had carried economy in health services much too far. He felt certain that when they received the next year's reports of the medical officers of the Ministry Health, the Board of Education, and the Londo County Council they would show a very mar difference in the physique of the children. Greenwood, when he was Minister of Health in th late Government, intended to introduce a Bill to dea with the problem of maternal mortality, but he w told that he could not bring it forward because financial stringency. Was there any possibility o that particular Bill being passed this year? E voluntary hospital in London was more or less in bad way, and they were living from hand to m On the education side some of their work was ficently done. In regard to the poor-law hospital they were doing a fine work without any sort of of pauperism about it at all. They were trying t create, although it did not exist yet, a real municipa health and hospital service. He wished to see national medical service throughout the count but meanwhile he would like to see, especially ndon, real coöperation and coordination in the ork of municipal and voluntary hospitals.

Government Reply.

Sir E. HILTON YOUNG (Minister of Health), replying the debate, said that there had been a resolute tempt to represent that unwise restrictions were ing placed on the public health services in the terests of economy. For that suggestion there was shadow of foundation of any sort or kind. The st argument used in favour of that contention was misquotation of a Circular on economy issued at e time of the national crisis to local authorities. he words of the Circular were:—

> "His Majesty's Government would not contemplate at local authorities should embark on a wholesale and -considered course of cutting down expenditure, whatever its character or purpose. Such a policy seems to them ither necessary nor advisable."

Was there in that any reckless disregard of the ficiency of the services in the interests of economy? urther down in the Circular they found the special servation that consideration was to be given as to hether a service was required on urgent grounds of ublic health. It was the policy of this Government, s it must be the policy of every Government which ad the welfare of the country at heart, to consider ublic health as a matter of urgent national importance nd to regard economy as false which would reduce he efficiency of the essential services.

ESSENTIAL SERVICES.

He had taken pains to get an estimate of all the chemes of development in matters of public health efore the Ministry at the time of the oncoming of he effort for economy. These amounted roughly o £1.000,000 worth, and of that not more than 150,000 worth had to be abandoned as not essential. Of the essential services he would put in the forefront t the present time the service of maternity and child welfare, and the service for dealing with the great scourge of tuberculosis. They had now an important new weapon in the fight against tuberculosis. Since the initiation of the new system of local administration, owing to the coordination of public assistance with public health services, they could now follow up cases when they left the sanatorium. At the end of December, 1930, the number of beds available for the treatment of tuberculosis was 15,972; at the end of December, 1931, the number available was 17,609. There was no evidence there of relaxation of effort. At the end of 1931 the number of infant welfare centres in England and Wales was 3043, compared with 2935 at the end of 1930. The number of antenatal clinics in England and Wales at the end of 1931 was 1262. compared with 1101 at the end of 1930. As regards maternal mortality he knew that there was a scheme put forward under the late Labour Government for the service to which Mr. Lansbury had referred, but that scheme was typical of the complete lack of touch with realities in administration shown by the late Labour Government. It would have placed a burden on the country's finances of a nature which the country was totally unable to bear at the time. Nor was it well conceived to get the best possible use out of the public money required to finance it. But because that was a frank impossibility at this time did it mean that they were going to relax in the war on maternal mortality? On the contrary, if they got rid of illusions they would be able to proceed in the most practical way to get the best use of the resources available. The Ministry had already sent a Circular to the local authorities for this purpose. There were services for promoting the welfare of mother and child before, at, and after birth, which local authorities could render, but they did not all render it. The Ministry was endeavouring to stimulate the local authorities to come up to the standard of the best, and make use of the powers which they already had. Further effort would be made to persuade those authorities which needed persuasion to strengthen their maternity services. Stress must be laid on the importance of educating the women themselves to take advantage of the services. Particular attention must be paid, of course, in the interests of economy to those areas in which the mortality among mothers was the highest.

PROGRESS OF COÖRDINATION.

The coördination of public health and public assistance was already yielding most valuable, interesting, and important results both in efficiency and economy. In the general scheme of the nation's finances there was no need for an immediate grip of parsimony in the public health services such as there was in some other national services, because there was a margin in the block grant for the development of the health services. When he spoke of the extension of the maternity services and the effort to secure a better standard among local authorities, he was relying upon the margin which was provided by the £5,000,000 increase in Exchequer money which was made available for local authorities at the time of the institution of the block grant system. That was one benefit from the new scheme. Another great benefit was the ability of the Ministry of Health to concentrate on its proper work as a clearing house of knowledge and information, and the source from which counsel and advice could proceed to keep the local authorities in touch with the best knowledge available for their service. The Ministry also had to be the staff brains of the whole national health services. Special inquiries had been carried out quite recently in the discharge of those staff functions into tuberculosis, cancer, and cerebro-spinal meningitis. Another bit of staff work which had been done at the Ministry of Health was in connexion with the important matter of nutrition. That was a modern science on which floods of fresh light were being cast every day, and it was difficult, even for the medical officers, to keep up to date with the latest information. In order to help them they had instituted a new standing advisory committee to collect the latest information on nutrition for the benefit of the medical profession and the public as a whole. The practical lesson of experience was that this was not very important for the middle and upper classes, which had a varied diet, but it was very important for the wage-earning classes, where diet was not so varied. The committee had brought out two reports, one on diet in poor-law children's homes, and the other on the vitamins, where the uninitiated could follow the natural history of these difficult subjects from vitamin A down to vitamin D, and even to vitamin E, and its function in promoting the fertility of rabbits.

HOSPITAL TRANSFER A SLOW PROCESS.

The classification of institutions, and in particular the transfer of hospitals from poor-law conditions to the new status of the general purposes hospital, was a problem which could not possibly be dealt with effectively in a short time. But he could say that the progress had been good and satisfactory, particularly in London. Sixty-eight institutions had been appropriated for special purposes following on a scheme of classification according to the last report. Since that report 11 more had been classified. There was nothing to complain of in the rate of progress there. The transfer from poor-law status to general public status in the case of hospitals was acting as a remarkable stimulus upon the institutions, since it made them, as it were, equals of the greatest and most famous hospitals in the land. It was the policy of the Ministry of Health to promote coöperation between voluntary and public hospitals in every possible way. The necessity of the voluntary hospitals as a part of our national scheme was recognised as an essential part of the structure. Both the voluntary hospitals and the public hospitals had their own useful fields of activity. He knew of no sense of hostility or antagonism between them, and there was no reason why there should be. The only rivalry was as to which could treat their patients best. The Ministry of Health must see that the

two divisions in the hospital structure should each pay due regard to the opportunities and possibilities of the other, and that each should be duly fitted into the structure. The review of boundaries was proceeding as fast as the difficulties would allow. They had to reconcile old traditions, old prejudices, and, in some cases, old antipathies, in order to carry out arrangements desirable in the interests of economy and efficiency in the modern world. On the whole progress had been satisfactory. Nine reviews had been completed, and four more inquiries had been held, which would lead to a decision very shortly. In addition to those 13, 15 others were being arranged, and as regards some others it was necessary to give those extensions of time which the Act contemplated. It was the policy of the Ministry of Health to encourage the making of exclusive declarations where it was possible in order to complete the process of segregation of activity which was the primary object of the Local Government Act. Here, again, a careful survey of all the services necessary was made, and in many cases a survey of the institutions must proceed to a fairly complete stage before a declaration could be made. Therefore they could not expect many declarations just yet. The number made last year was five, in addition to those already mentioned.

POST-GRADUATE SCHOOL.

As to the situation in regard to the post-graduate school, that was a typical instance of how the voluntary hospitals and the public hospitals could discharge complementary functions in the whole scheme of hospital accommodation. The post-graduate school had now come to birth, and they believed that it would be of very great promise for the future of medical science, medical education, and the health of the people. It had come to birth at the London County Council hospital at Hammersmith. It would be a school in connexion with a public general hospital, the only one of the kind. The present stage of its evolution was this: the Charter had been granted and the governing body set up. At present the actual organisation of the school and a scheme for the provision of buildings for the school were being worked out, and before very long they hoped to see this school an established fact.

Replying to Mr. D. GRENFELL, Mr. ERNEST BROWN (Parliamentary Secretary to the Ministry of Health) said that if the hon. Member would study the last Report, that for 1930, issued by the chief medical officer of the Ministry, he would find a most valuable section dealing with cancer, and another section dealing with rheumatic diseases. So far from being lax in this matter the Ministry was thoroughly alive to the need for research, as well as for action in connexion with those diseases.

Dr. MORRIS-JONES asked leave to withdraw his motion.

The motion was withdrawn.

HOUSING POLICY.

Replying to a debate on housing policy which followed,

Sir E. HILTON YOUNG said that each house approved for subsidy would incur to the Exchequer a liability of £130, and a consequential liability to the local authority of £65, so that the liability to public funds incurred by each house approved for subsidy was £190—the equivalent of a charge on the Exchequer of £7 10s. per year for 40 years. That showed how serious was still the liability, even with the fall in the cost of housing, involved in the approval of houses for subsidy. He warned the House that in the present state of national finance it was not possible to look upon that obligation lightly. Already the annual recurring liability in the national budget for housing was £12,750,000. Since the war the number of houses built had been 1,820,000. The increase in population between 1921 and 1931 was 2,000,000. The result was that at the present time over the country as a whole the average number of persons to a house was barely four. That did not show that there was no longer a housing problem, because there was not an even distribution over every class of house and all over the country. It showed, if they took the country as a whole, that there was no evidence of a housing shortage. It meant that in each proposition for fresh housing they must consider whether the area in question was one of the areas that was in need of more housing accommodation. It was established that there was no longer any need for a great State effort to provide the kind of housing which for the most part they had been providing, and that they had provided enough of the better class subsidised house. What they had not done was to provide enough smaller houses for the poor person. They must, therefore, concentrate the whole housing effort on the provision of smaller houses for the wage-earners which required State assistance. That was the policy of the Government at the present time.

With regard to the slum areas, Sir E. Hilton Young said that the remedying of that evil must always continue along with the adequate supply of new houses of the type which the country required Under the Act of 1930 a very drastic method was applied for dealing with the problem. That Act was a very powerful engine, and needed to be used with great caution. He was not surprised, therefore, that the local authorities were proceeding slowly in that matter. Nevertheless, under that Act schemes had been passed for clearance areas which would finally lead to the clearing away of 13,500 unfit slum houses. So far the number of houses dealt with under the Housing (Rural Workers) Act, 1926, was 4469, and he hoped that further use would be made of that Act. The applications received for the construction of houses under the Housing (Rural Authorities) Act, 1931, had not been so large as was expected, but 112 applications had been received for some 2000 houses, which were now under construction. Rebutting the suggestion that the Government were relaxing in a substantial degree their housing effort owing to the influences of considerations of economy, Sir E. Hilton Young said that at the end of February there were 38,450 assisted houses under construction, and on the corresponding day in February in the year before there were 36,000. This showed that there was no falling off in the building effort of the country.

The motion that the Speaker do leave the Chair was agreed to.

TRANSITIONAL PAYMENTS BILL.

The Transitional Payments Prolongation (Unemployed Persons) Bill was read the third time.

This Bill was read the third time in the House of Lords on Thursday, April 14th, and afterwards received the Royal Assent.

REGISTRATION OF FOOD FACTORIES.

On Tuesday, April 12th, the London County Council (General Powers) Bill was considered by a Select Committee of the House of Commons.

The Hon. EVAN CHARTERIS, K.C. (who appeared for the L.C.C.), said that the part of the Bill which was opposed was Clause 16. The purpose of that clause was to enable the Council to compel the registration of certain premises in which certain kinds of food were prepared or manufactured. The clause required the registration of—

> "any premises in the district of any sanitary authority used or proposed to be used (1) for the sale, or the manufacture for the purpose of sale, of ice-cream or other similar commodity, or the storage of ice-cream or other similar commodity intended for sale; or (2) for the preparation or manufacture of sausages, or potted, pressed, pickled, or preserved meat, fish, or other food intended for sale."

The object of the Council, Mr. Charteris said, was to anticipate the evil, instead of punishing those found guilty of it, by registering the premises in which these various processes were carried on. The proposals in regard to ice-cream were not opposed, but there s a petition against the other portion by the tional Federation of Meat Traders' Associations.

Dr. **Charles Porter**, called as a witness on behalf the promoters, said that the principal factor which dered this such an important matter was that less there was adequate control of food there was ious risk of contamination, with consequent injury public health. The Society of Medical Officers of alth, he said, had always been in favour of registra- n, without which it was quite impossible to know e situation of the places where this work was carried , and to take measures to avoid the risk of con- mination. There was a great increase at the esent time in the use of cooked foods and foods hich could be easily cooked. Sausages were one the most commonly used articles of food among orer people, and food-poisoning cases were almost variably due to foods of this type.

The Committee decided to allow Clause 16 to remain the *Bill*.

THE BUDGET.

On Tuesday, April 19th, the House of Commons ent into Committee of Ways and Means, Sir D. **Herbert** in the chair.

Mr. **Chamberlain**, Chancellor of the Exchequer, *the course of his Budget statement, said that in* eptember last, at the time of the national crisis, here was a prospective deficit of £74.000,000. To ake good that deficiency and to balance the national ccounts demanded the highest courage and deter- mination on the part of the Chancellor of the Exchequer, and supreme confidence in the readiness f the people to undertake whatever burdens and acrifices might be laid upon them in order to support he national credit. (Cheers.) By a combination of economy and new taxation Mr. (now Lord) Snowden had provided for a reduction of debt by £32.500,000, and for a surplus of £1.500,000. Not only had his noble friend's anticipations been fulfilled but, together with the small surplus of £364,000 which had actually been achieved, must be taken the fact that, instead of £23,000.000 being appropriated from the Dollar Exchange Fund, as was proposed in September, it had only been necessary to take £12,750,000. They were therefore £9,000,000 better off than Lord Snowden had anticipated. (Cheers.) That result had produced a profound impression upon instructed opinion in all parts of the world. (Cheers.) In spite of the concessions which the Government had made on the pay cuts originally proposed the estimated economies had been more than met, and, the reduction of unemployment coming to their aid, they were able in the end to show savings amounting altogether to £34,500,000, compared with Lord Snowden's proposed economies of £22,000,000.

Proceeding to deal with the estimates for this year, Mr. Chamberlain said that nothing was included in respect of receipts for reparations and allied war debts, or in respect of outgoings for war debt payments. Both sides of the account were treated as being in suspense. Similarly, nothing was included in respect of receipts for those Dominion war debts, the service of which had been suspended until July 1st next. This meant a shortage of £10,000,000 as compared with the forecast of last September, which assumed that after the expiration of the Hoover Moratorium the previous position of reparations and war debts would be restored. Last September the total for supply services for 1932–33 was estimated at £526,000,000. It was proposed to effect economies of £70,000,000, leaving the total at £456,000,000. Actually the estimates *presented to* Parliament showed a total of only £447.204.000. The savings therefore amounted to nearly £79,000,000 in spite of concessions in pay cuts costing £3,500,000, and of unprovided expenditure to the amount of about £1,250,000 for income tax collection and work under the Import Duties Act. It was estimated that there would be a decrease of £10,000,000 in surtax, and £28,000,000 in income tax compared with the estimates for last year. The total inland revenue was estimated at £427,000,000, or more than £32,500,000 less than the figure provisionally put forward in September. Customs and excise were estimated to yield £297,500,000, or about £40,000,000 more than last year. He regretted that there was no opportunity this year of giving any relief to the income-tax payer. Nor could he make any change in the beer duty. The rates of duty on motor-cycles would be fixed at 15*s*., 30*s*., and £3, according as to whether the engine was of a capacity not exceeding 150 c.cm. and not exceeding 250 c.cm., and exceeding 250 c.cm. respectively. This scale would come into force on Jan. 1st, 1933. Any cycle registered for the first time before Jan. 1st next, on which duty had been paid at the rate applicable to a cycle under 224 lb. unladen weight, would in future continue to be liable to the lower rate of duty applicable to cycles with an engine capacity between 150 and 250 c.cm. The tea duty would be raised to 4*d*. per lb. on foreign tea, with a preference of 2*d*. per lb. in favour of Empire tea. The final balance sheet showed an estimated expenditure of £766,004,000 and an estimated revenue (including £33,000,000 from the 10 per cent. revenue tariff, horticultural products duty, additional duties recommended by the advisory committee, and the proposed changes in *taxation) of £766,800,000. This left an estimated* surplus of £796,000.

HOUSE OF COMMONS.

TUESDAY, APRIL 12TH.

Health and Housing in Scotland.

Mr. **Barclay-Harvey** asked the Secretary for Scotland the total amounts expended on health and housing, exclusive of relief to unemployed persons, by the Government and local authorities in Scotland in the financial years 1912–13 and 1930–31, respectively.—Mr. **Skelton** replied: I regret that information for the year 1930–31 is not yet available. The following table gives the expenditure on housing and health services in Scotland during the years ended May 15th, 1913, and 1930.

Service.		Expenditure out of— Parliamentary votes and grants.	Local rates.	Other receipts (rents, &c.)	Total expenditure.
		£	£	£	£
Housing ..	1913	Nil.	38,310	105,872	114,182
	1930	1,621,000	656,000	2,442,000	4,719,000
Health Services *	1913	30,000†	390,358	10,000‡	430,358
	1930	625,000	1,006,000	41,000	1,672,000

* Comprises hospitals, treatment of disease (including tuberculosis and venereal diseases) and maternity and child welfare

† Estimated proportion of grants for general expenditure.

‡ Estimated.

WEDNESDAY, APRIL 13TH.

Hospitals and Motor Accidents.

Sir **John Haslam** asked the Minister of Transport if he was aware that, according to the British Medical Association, 7326 motor accidents were treated in 135 hospitals during 1931, incurring a total cost to the hospitals of £64,132, and that the claims repaid under the Road Traffic Act amounted to £6575 or about 10 per cent.; and what steps he proposed to take in order that the expectations under the Act could be realised.—Mr. **Pybus** replied: As I stated on Feb. 17th, in answer to a somewhat similar question, while I sympathise with the difficulties of the hospitals I am afraid I cannot see my way to introduce further legislation.

Motor Accidents: Responsibility and Compensation.

Mr. **Rhys Davies** asked the Home Secretary the number of motor accidents in which the police had failed to trace some of the responsible parties during the last six years, and the number of cases in which compensation in some form or other had been paid to the victims of those accidents.—Mr. **Stanley** (Under Secretary, Home Office) replied: I am informed by the Commissioner of Police that during the last six years there have been eight persons killed in the metropolitan police district by unknown vehicles. Corresponding figures for the rest of the country are *not available*, nor as to non-fatal accidents in the metropolitan police district. No information is available as to the number of such cases in which compensation has been paid.

Supply of Medicines in Rural Districts.

Mr. PERKINS asked the Minister of Health whether his attention had been called to the fact that insured persons living in the village of Edgeworth, Gloucestershire, had to walk six miles to Painswick to obtain medicine; and whether he would consider the advisability of the establishment of a surgery in the village of Miserden.—Sir E. HILTON YOUNG replied: My attention has not previously been drawn to this matter, but I am making inquiry and will communicate further with my hon. friend.

THURSDAY, APRIL 14TH.

Cost of Health and Housing Schemes.

Mr. BARCLAY-HARVEY asked the Minister of Health what was the total cost of health and housing schemes of the Government and local authorities in England and Wales in the financial years 1912–13 and 1930–31 respectively, excluding any sums paid in relief of unemployment.—Sir E. HILTON YOUNG replied: It is assumed that the health schemes of local authorities referred to by my hon. friend are those which, prior to April 1st, 1930, were assisted by direct Government grants. These grants (except the Port Sanitary grant) were discontinued by the Local Government Act, 1929, and were merged in the new Exchequer grants which are paid towards local government expenses generally, and cannot be apportioned to individual services. I am appending a statement relating to 1912–13 and 1929–30 (the latest year for which figures are available), showing the gross expenditure of local authorities on these services and on the housing service, the Government grants, and other specific income in aid of the services, and the balance of expenditure not met out of specific income. (See Table.)

Statement showing the Expenditure and Income of Local Authorities in England and Wales in Respect of the Undermentioned Services.

Service.	YEAR 1912–13. Total expenditure other than out of loans.	Income other than from loans.		Balance of expenditure not met out of specific income.	YEAR 1929–30. Total expenditure other than capital expenditure.	Income other than capital receipts.		Balance of expenditure not met out of specific income.
		Government grants.	Other specific income.			Government grants (*a*).	Other specific income.	
	£	£	£	£	£	£	£	£
Tuberculosis	95,500	30,000	35,500	30,000	3,338,940	1,697,849	117,467	1,523,624
Venereal diseases ..	—	—	—	—	411,341	300,313	1,266	109,762
Maternity and child welfare	—	—	—	—	2,408,801	936,246	446,319	1,020,236
Port sanitary	47,500	3,900	14,200	29,400	107,085	41,927	13,639	51,418
Welfare of the blind ..	—	—	—	—	468,795	8,470	31,474	428,851
Mental hospitals ..	4,288,000	998,000	580,000	2,710,000	9,052,325	1,119,689	1,847,144	6,085,492
Mental deficiency ..	—	—	—	—	1,500,244	678,250	127,604	694,390
Housing:—								
Assisted housing schemes under Housing, &c., Act, 1919	—	—	—	—	14,094,401	6,744,135	6,160,700	1,149,566
Other State-aided housing schemes ..	—	—	—	—	16,714,816	4,595,073	10,939,865	1,161,878
Other housing schemes	850,000	—	647,000	304,000	1,625,584	1,606	1,366,829	257,147

(*a*) Including grants made in connexion with schemes of work for the unemployed. The amounts of these grants are not distinguished from other grants.

Examination of Girls Concerned in Sexual Offences.

Captain ELLISTON asked the Home Secretary whether arrangements were being made to appoint women medical officers for the examination of girls concerned in sexual offences, in accordance with the requests of moral welfare committees in the metropolitan area.—Sir HERBERT SAMUEL replied: The number of cases is not great enough to warrant special appointments, whether of men or of women, for this purpose. If in any particular case the parents of the child desired that the examination should be conducted by a woman doctor and one were available, her services would be utilised.

Sweepstakes.

Mr. HUTCHISON asked the Home Secretary whether there would be any alteration in the administration of the law affecting sweepstakes by his department during the period in which that question was being examined by the proposed Royal Commission.—Sir HERBERT SAMUEL replied: I do not contemplate any alteration.

Slum Clearance Schemes.

Mr. GROVES asked the Minister of Health how many slum clearance schemes were at present being carried out in England and Wales; the total number of houses to be demolished; and the total number of houses to be constructed.—Sir E. HILTON YOUNG replied: I have received resolutions declaring 417 areas in England and Wales, the clearance of which involves the demolition of approximately 14,000 houses, to be clearance areas under the Housing Act 1930. It is anticipated that houses sufficient for the accommodation of 68,000 persons will be provided.

Town and Country Planning Bill.

Mr. LOGAN asked the Minister of Health what action it was proposed to take to ensure the passing of the Town and Country Planning Bill this session.—Sir E. HILTON YOUNG replied: I hope that no special action will be required to ensure the passing of the Bill this session.

Incurable Disease in Britain.

Mr. RHYS DAVIES asked the Minister of Health if he any information as to the number of persons sufferi from incurable disease in this country, and the number fo whom accommodation was provided by voluntary organis tions; and whether there were any public institutions incurables who were unable to look after themselves, apart from mental institutions.—Sir E. HILTON YOUNG replied: I regret that I am not in possession of any st on the points raised in the question. I do not know any institutions that exactly answer the description the last part of the question.

TUESDAY, APRIL 19TH.

Cerebral Fever at Windsor.

Mr. MCENTEE asked the Financial Secretary to the W Office how many of the cases of cerebral meningitis Windsor were among troops quartered in the barracks; how many were among troops in the old quarters; and whether full sanitary provisions were mad in the quarters of the guard at Windsor Castle—Mr. Du COOPER replied: There are no strictly modern barracks a Windsor, although improvements have been introduce from time to time. Since Jan. 1st there have been cases of cerebro-spinal fever, five of which occurred Victoria Barracks, and four at Combermere Ba The answer to the last part of the question is in affirmative.

OBITUARY

ARTHUR JERVIS, M.D. Durh., D.P.H. Camb.

HE recent death of Arthur Jervis, although it did come as a surprise to those who knew him best, ught to all his friends a sense of the loss of a able personality. He was little in the public , but he lived a life of great helpfulness to his le. He was educated at St. George's Hospital, l after taking the usual double qualification in 35, he matriculated at Durham and took the M.B. d B.S. of that University in 1889, the M.D. in 97, and the D.P.H. of Cambridge in 1895. He ved as house surgeon at the Dreadnought Hospital d he was house physician and assistant registrar St. George's. Soon after he qualified he had a ief experience of practice, but he disliked it and ve it up. When the war came in 1914 he volunteered r service, but, as was too often the case with similar fers, he was told that “ veterans were not wanted.” e was determined to be useful, however, and returned his old hospital as house physician and surgeon for year, serving under some of those who in earlier ys had been his clinical clerks. Even after this was not acceptable to the home authorities, it the French Red Cross gladly accepted his services d he spent many months in the Verdun area. His timate knowledge of the language enhanced the alue of his services and he had the unusual privilege being taken over the whole of the French front. fter these adventures the home authorities at length ave him a commission and utilised his services for ome months in the examination of recruits. He was hen transferred for service in hospital ships and he erved in these until the end of the war. Unfortunately n his last voyage to Palestine he contracted malaria hich developed after his return home. For the est of his life he had to submit to impaired health, nd he became too conscious of a degree of deafness ; his was not bad enough to interfere with the willing elp which he gave to others, but it made him shy f what he called “inflicting himself on his friends.” But no one who knew him could call a visit from Jervis an infliction, for he was full of interests and knowledge. An intimate circle of friends is left to deplore his death.

JOHN HENRY SALTER, M.R.C.S. Eng., D.L., J.P.

A REAL personality in the medical profession, Dr. John Henry Salter, of Tolleshurst D'Arcy has died at the great age of 91; having been 67 years in a country practice he died in harness, indeed it is only a few days since he was reappointed medical officer of health for his own district of rural Essex.

Dr. Salter whose whole life has been associated with Essex, received his medical education at King's College Hospital and took the qualifications of M.R.C.S. Eng., L.S.A. Lond., in 1864. He has himself recorded that his original intention was to devote himself to pure surgery, but he considered that the loss of an eye in a shooting accident would be a drawback to his prospects, and settled down to country practice as quite a young man. He met with great professional and social success. In the straggling district of Essex marked out by the towns of Colchester, Chelmsford, and Maldon, he was known personally or by repute to everyone—he may be said to have been an institution both as doctor and sanitarian. But his fame as a sportsman was perhaps greater and was certainly more widely spread than as a doctor. The loss of an eye did not prevent him from becoming famous as a shot and his home, D'Arcy House, was full of sporting trophies. He is reported to have kept a diary throughout his extensive life, and seeing the changes which that life has seen in the profession of which he was a devoted exponent, it is to be hoped that parts at least of his diary will be free for publication. The diary of the medical man must contain much unfitted for the public eye, but in a record of 60 or 70 years of country practice there must lie a picture of English society of great significance. And this the more that Dr. Salter knew, and, indeed, was the personal friend of many distinguished people outside the county of Essex, where he was a magistrate and deputy-lieutenant.

MEDICAL NEWS

University of Cambridge.

At recent examinations the following candidates were successful :—

D.M.R.E.

Part I.—G. I. Benjamin, C. C. Divanji, E. D. G. Gillies, John Lumb, A. B. Sullivan, and J. B. Watson.

Part II.—J. S. Brown, G. T. Calthrop, E. N. Cook, E. R. Crisp, Marjorie P. C. Greene, J. P. Grieve, H. J. Ham, J. P. Hederman, M. H. Hellman, J. N. Jacobson, J. L. Razdan, F. G. Stewart, and E. R. Williams.

University of London.

At recent examinations the following candidates were successful :—

D.P.H.

Part I.—C. A. Bozman, C. J. H. Brink, C. G. H. Campbell, E. J. de Verteuil, Mary G. H. Dickson, A. R. Forbes, Agnes B. Francklyn, T. O. Garland, J. C. P. Grey, T. C. John, F. B. Khambatta, George Macdonald, H. A. Mackenzie-Wintle, Dorothy Makepeace, R. B. Mayfield, R. M. Morris, A. R. Thompson, and K. C. Uppal.

National University of Ireland.

University College, Cork.—At recent examinations the following candidates were successful :—

THIRD EXAMINATION FOR M.B., B.CH.

Part I.—R. A. Coughlan, P. J. Geoghegan, D. C. Lawton, and D. G. O'Driscoll.

Part II.—James Fitzgerald and Thomas Sheahan.

D.P.H.

Mary C. O'Connell (second class honours) and Nora O'Connor.

University of Glasgow.

On April 16th, the following degrees were conferred :—

M.D.—P. J. Molloy and D. Russell (with commendation), J. W. Crawford, J. F. Hamilton, M. S. Purvis, B. Reid, and S. C. Shanks.

M.B.—A. C. Lendrum (with commendation), J. J. Barton, I. E. Bernstein, J. Bolton, W. Boyd, W. Brownlie, R. P. Butler, I. Camrass, S. A. Carloo, W. G. Cowan, Edith D. Dempster, W. M. Dennison, M. C. Dickson, M. C. G. Dods, Mary M. Downes, J. S. Gemmill, J. D. Gillies, Margaret R. Gilmour, Margaret M. Goudie, D. Houston, A. Kelly, G. A. Macdonald, T. C. Macdonald, Barbara A. A. McGeachy, J. McGovern, I. R. MacIntyre, I. MacKinnon, D. T. Maclay, E. McNamara, A. McD. Maiden, H. D. Miller, D. Murray, J. H. Neill, A. F. Rodger, L. D. W. Scott, W. B. Shaw, D. M. Walker, and R. J. Wotherspoon.

Scottish Conjoint Board.

As a result of recent examinations of the conjoint examining board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates have been granted the diplomas of L.R.C.P. Edin., L.R.C.S. Edin., L.R.F.P. & S. Glasg. :—

B. D. J. van Rensburg, L. J. Wigston, P. H. A Gromelski, M. A. Walker, M. U. Ahmad, R. L. Chamberlain, Maurice Cohen, H. A. Bramwell, Alexander Reid, Euphemia Cardwell, A. E. Albuquerque, J. T. Cumming, W. C. Ross, Julius Meyer, M. M. Ghosh, J. B. Macdonald, M. M. El Hennawi, John Stewart, and M. J. Moynihan.

Royal College of Surgeons of England.

A meeting of the council was held on April 14th, with Lord Moynihan, the President, in the chair. Sir Henry Newland was introduced, and presented an address on behalf of the Royal Australasian College of Surgeons, of which he is president.

The following diplomas were granted :—

F.R.C.S.—H. O. Clarke (Dublin, Middlesex, and St. Thomas's).

M.R.C.S.—Sarah N. S. Barker (Leeds), A. L. Kenyon (Manchester), and R. S. Sandhu (Punjab).

D.T.M. & H.—Genesis Ameratunga (Ceylon), R. M. Buchanan (Glasgow), Dorothy D. Chacko (College of Physicians and Surgeons, New York), Jane G. E.-F. Cummins (Dublin), G. C. H. Franklin (Cooper Med. College), H. S. Gear (Witwatersrand), Amanda Hoff (Columbia), C. G. Hoole (Ceylon), S. R. Iyengar (Madras), Sirisena Petiyagoda (Ceylon), A. V. Pieris Ceylon), G. W. Puvimanasingham (Ceylon), Henry Richards (Guy's), John Rodger (Edinburgh), B. N [illegible] Silver (Maryland), Ramasawmy [illegible] Smith (Colorado), R. H. B. Snow [illegible] C. A. Stanley (St. Thomas's), R [illegible] Walcott (Glasgow).

Mr. J. H. Badcock (London) and Mr. H. B. Roderick (Cambridge), being members of the College of over 20 years' standing, were elected to the Fellowship.

The Jacksonian prize for 1931 was awarded to Mr. J. Paterson Ross, F.R.C.S., of St. Bartholomew's Hospital, for his essay on the Surgery of the Sympathetic Nervous System. *A certificate of honourable mention for an essay* on the same subject was granted to Mr. Lambert Charles Rogers, M.R.C.S., of the Royal Infirmary, Cardiff. For the year 1932 the subject for the Jacksonian prize is the *Pathology, Diagnosis, and Treatment of Diverticula of the* Large and Small Intestine, and for the year 1933 the Pathology, Diagnosis, and Treatment of Localised Rarefying Changes in Bones, as illustrated by Perthes' (or Legge's) disease, Schlatter's disease, Kümmell's disease, and allied conditions.

The President announced that the trustees of the late Lord Leverhulme had made a grant of £1000 for research scholarships, and proposed to allocate a similar sum in future years. A resolution expressing appreciation of the gift was unanimously adopted.

British College of Obstetricians and Gynæcologists.

The *quarterly meeting* of the council was held on April 11th. It was decided that in future the president, treasurer, and honorary secretary should be elected at the July meeting of the council, and take office at the autumn meeting. Prof. W. Blair Bell (Liverpool) was re-elected president until the autumn meeting of the council in 1932, when the maximum term of office allowed by the articles of association expires. The term of office of Prof. Munro Kerr *(Glasgow) having expired, Sir Ewen Maclean (Cardiff)* was elected vice-president in his stead. Dr. J. S. Fairbairn (London) was re-elected vice-president. Mr. Eardley Holland (London) was elected treasurer, and Prof. W. Fletcher Shaw (Manchester) hon. secretary. Dame Louise McIlroy and Sir Henry Simson were coöpted to the council until the next annual general meeting.

The President intimated that the extended time for acceptance of invitations to the foundation Fellowship or Membership had now expired (the Dominions and India excepted). It would now be necessary for all prospective entrants to the College to obtain the ordinary Membership. It was also announced that reference committees had been established *in Canada and India, and that all applications* for Membership from these Dominions would now be referred to these committees, and only candidates whose applications are endorsed by the respective reference committees would be permitted to take the examination for Membership.

At the *annual general meeting* on April 11th the following were admitted to the Fellowship :—

Trevor Berwyn Davies, Donald MacIntyre, Alexander Croydon Palmer, and Wilfred Shaw.

The following were admitted to the Membership :—

Elizabeth Grace Elspeth Baillie, Arthur Capel Herbert Bell, Alison Mary Hunter, Elinor Drinkwater Jackson, Ralph Lodge, Louisa Martindale, Charles David Read, William George Richards, and Albert Sharman.

It was announced that the following had been elected to the council to fill the vacancies caused by the statutory retirement of one-third of the members thereof :—

Representatives of the Fellows: Dr. J. [illegible] Sir Ewen Maclean and Prof. Miles H[illegible] Prof. J. M. Munro Kerr (Scotland). Members: Dr. C. P. Brentnall (Provinc[illegible] (Scotland); Dr. R. H. J. M. Corbet (Ireland).

The President announced that, through the help of an anonymous donor, the council has decided to purchase a home for the College in London. It was felt that the present satisfactory state of the College finances, and the help accorded by Lord Riddell, justified the undertaking, though it was fully realised that it was a big finan[illegible] responsibility. Lord Riddell's donation was for a period [illegible] seven years only, and efforts must be made to secure suffi[illegible] capital to replace it as a source of income at the end [illegible] this time. The opening of the College House would ta[illegible] place, if possible, on the same day as the annual din[illegible] in the autumn.

The meeting unanimously approved of a memoran[illegible] on the obstetrical and gynæcological training of med[illegible] students, prepared by the council for submission to th[illegible] General Medical Council.

Church Missionary Society.

The annual meeting of the Medical Mission Auxiliary of the C.M.S. will be held in the Central Hall, Westminster at 7 P.M. on Wednesday, May 4th. Field-Marshal Sir Claud Jacob will take the chair and the speakers will include Dr. H. T. Holland (Quetta), Mrs. C. Bacon, M.B. (Kweilin, Kwangsi-Hynan), and Mr. J. Howard Cook, F.R.C.S. Tickets may be obtained from the Superintendent, Lo[illegible] Department, Church Missionary Society, Salisbury-square, London, E.C.4.

Crystal Analysis.

The discourse to be given by Sir William Bragg at the Royal Institution conversazione on May 6th will be related to the various developments in pure and applied science which have depended on the use of the *X ray methods* of analysis [illegible] crystal structure. In order to supplement the discourse an exhibition is being arranged which will demonstrate more fully the work that has been done. Members of scientific *societies, senior students of universities* and technical institutions, and others interested in this work will be admitted if they present themselves at the Royal Institution, 21, Albemarle-street, London, W., between 10 A.M. and 6 P.M. *on Monday, May 9th,* or Tuesday, the 10th.

Reinstatement of Medical Man.

Some three weeks ago Dr. G. Staveley-Parker was dismissed from the honorary staff of Stamford Infirmary in consequence of complaints by the nursing staff of alleged breaches of rules of the contributory scheme. Last week by 25 votes to 20 the governors decided to reinstate him. A further resolution that the governors approved the action *of the staff of the infirmary* in bringing certain irregularities to their notice was put to the vote and lost. The committee of the benevolent fund of Rutland Engineering Works had threatened to withdraw their annual grant of £3[illegible] unless Dr. Parker was reinstated. It is reported that the Marquess of Exeter, president and chairman of the infirmary, and other governors, have since resigned.

Society for Relief of Widows and Orphans of Medical Men.

At a quarterly court of directors of this society, held on April 13th, Mr. V. Warren Low, president, being in the chair, *the death was reported of the widow* of a member who died in 1897; during this 15-year period she had received in grants £2120. Her husband had been a member for eight years and paid in subscriptions £10 10*s.* The expenses for the quarter were £84 17*s.* 6*d.* Grants to the amount of £166 5*s.* were voted—£91 to orphans who had reached the age of 16, at which age the ordinary grants cease, to enable them to continue their education or start in some professional or business career. One widow who applied for assistance was awarded a grant of £60 per annum with £50 per annum to each of two children. The annual general meeting of the society, membership in which is open to any registered practitioner who at the time of his *election is resident within a 20-mile radius* of Charing Cross will be held on May 11th. Particulars on application to the Secretary at the offices of the society, 11, Chandos-street, Cavendish-square, London W.1.

Contraceptive Clinics in Manchester.

The medical officer of health for Manchester, Dr. R. Veitc[illegible] clinics are being opene[illegible] and Crumpsall Hospita[illegible] methods of contrace[illegible] The medical officers, who are Dr. Olive Gimson an[illegible] Dr. Elizabeth Byrd respectively, will attend fortnightly f[illegible] sessions of two hours. The clinics are being provided, it [illegible] stated, in strict accordance *with the* Ministry of Health Memorandum, which required that instruction in contra-ceptive methods shall be given only in cases where *for medic[illegible] reasons* pregnancy is contra-indicated. Practitioners a[illegible] invited to send patients with a card or note of introducti[illegible] *stating the nature of these reasons.* The clinics *form* [illegible] integral part of the gynæcological and maternity section of t[illegible] hospitals, and are in no way differentiated from the ordina[illegible] hospital provision. They will be known as the mother[illegible] clinics, and attention will be *paid to the privacy* and comfo[illegible] of those who attend.

gnosis and Treatment of Venereal Diseases.

course of instruction in this subject begins this week he Municipal Clinic, 155, Regent-road, Salford. Meetings be held once a week.

adwick Lecture in Paris.

ir Humphry Rolleston, Regius professor of physic in University of Cambridge, delivered a Chadwick lecture Paris on April 8th. His subject was the Pioneers and gress of Preventive Medicine. Sir Humphry was cially welcomed by Dr. J. P. G. Meillère, President of Academy of Medicine of France, and after the lecture f. C. Hartmann and Prof. C. Achard spoke on the mmunity of public health ideals in the two countries.

rwin's House.

t is announced that the house and grounds of Down use, at Downe, in Kent, where Darwin lived for 40 years, open to the public without charge from 10 A.M. to 5 P.M. Sundays and weekdays alike.

blic Health in the Tropics.

A Chadwick lecture on the Educational Aspect of Public alth Work in the Tropics, with special reference to Kenya lony, will be given by Dr. J. H. Sequeira, late President the Kenya Branch of the British Medical Association, the council room of the Association, Tavistock-square, ndon, W.C., at 5.15 P.M., on Thursday, April 28th.

lking Films for a Hospital.

The Royal Devonshire Hospital at Buxton is to be ovided with a "talkie" apparatus at the cost of operators, many of whom are sent to the institution for eatment for gouty and rheumatic affections. The films ll be provided free of charge by a cinema company.

carcity of Young Doctors.

At the annual meeting of governors of Rotherham Hospital mment was made upon the scarcity of newly qualified edical men. It was stated that the hospital had spent 0 upon advertising and travelling expenses in connexion th medical appointments.

entral London Ophthalmic Hospital.

It was reported at the annual meeting last week that the w nursing home for private patients had already justified self by results. Small contributions by patients again creased.

resentation to a Surgeon.

On retiring from the active staff of the Royal Liverpool hildren's Hospital, after 32 years, Mr. R. C. Dun was last eek presented with a portrait of himself, given by ubscribers to the hospital and personal friends. He has een elected to the council of the hospital and appointed onsulting surgeon.

ayliss-Starling Scholarship.

Application is invited for this scholarship, of the annual alue of about £120 (with exemption from tuition fees) enable at University College, London. The scholar will e required to follow a course of study involving a training n the principle and methods of research in physiology nd biochemistry. Application must be made in proper orm by May 14th.

onference on Sterilisation.

A Conference on Voluntary Eugenic Sterilisation will be eld at the Caxton Hall, Westminster, on Monday, May 23rd morning and afternoon). The speakers will include Sir Thomas Horder, Dr. R. Langdon-Down, Mr. C. J. Bond, and Dr. C. P. Blacker. Particulars may be had from the ecretary of the conference, at 16, Mulberry-walk, London, S.W.3.

Invalid Children's Aid Association.

The annual meeting of this association will be held at 3 P.M. on Tuesday, May 3rd, at Crewe House, 15, Curzon-street, London, W., by permission of Lord and Lady Crewe. Lord Titchfield will take the chair, and the speakers will include Lady Snowden and Sir William Hale-White. The address of the Association is 117, Piccadilly, W.1.

Children's Hospitals.

The Children's Hospital, Paddington, received last year almost exactly the same number of in-patients, 792, as in 1930. They cost £3 14*s.* per week—a slight reduction; the 42,000 out-patients cost 7*s.* 10*d.* each. The children's parents voluntarily contributed £735.—Last week Major General J. E. B. Seely opened a new out-patients' department at the Invalid and Crippled Children's Society's Hospital at Plaistow, and the building was dedicated by the Bishop of Barking. Dr. F. G. Collins, medical officer of health for West Ham, expressed a hope that there would soon be a clinic where mental cases among the young might be treated.

Devonshire Hospital, Buxton.

The committee of management of this hospital have recorded their thanks to Dr. C. W. Buckley, Dr. J. B. Burt, and Dr. William Shipton for their 20 years of service on the active honorary medical staff and have asked them to give the hospital the benefit of their experience for a further five years. This invitation has been accepted.

Charing Cross Hospital.

Last year the income increased by over £4000, and the expenditure fell by £800. The new casualty department has been completed, further dressing-rooms, a waiting-room, and an additional fully equipped theatre have been provided, and the main section of the new nurses' hostel in Haverstock Hill, Hampstead, has been erected. The hospital has provided two private omnibuses for the conveyance of the nurses to and from the hostel.

Donations and Bequests.

Among other bequests the late Mr. Richard Foster Bolitho, of Gulval, Cornwall, left £10,000 each to the West Cornwall Dispensary and Infirmary; the South Devon and East Cornwall Hospital; and the Royal Cornwall Infirmary, Truro; and £5000 each to the Devon and Cornwall Sanatorium for Consumption, Didworthy; the Sanatorium for Consumption, Tehidy; and St. Dunstan's Hostel for the Blind.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 25th.—8 P.M., ODONTOLOGY. Mr. W. Warwick James and Mr. Somerville Hastings: Mouth-breathing and Nasal Obstruction. A discussion will follow. LARYNGOLOGY. Members of the Section are specially invited to attend and to take part in the discussion.

TUESDAY.—5 P.M., MEDICINE. Short Papers: Dr. S. Harold Cookson: The Heart in Thyroid Disease. Dr. Adolf Schott (Bad Nauheim): The Respiratory Changes of Blood Pressure. Dr. A. Brian Taylor: Tuberculous Empyema. Dr. E. R. Cullinan: Dermatomyositis.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Annual General Meeting. Short Papers: Dr. T. Hare: Demonstrations of Pathological Cases in the Dog. (i) Pituitary Adenoma with Dystrophia Adiposogenitalis. (ii) Neurocytoma of Suprarenal Gland. (iii) Fused Thyroid Glands. (iv) Aberrant Thyroid Tuberculosis in a Blackbird. Mr. A. B. Orr: A Note on the Incidence of Contagious Bovine Abortion in Great Britain. Dr. H. P. Bayon: Identical Primary Neoplasms (Nephromata) in Two Hens of the same Strain. Mr. J. T. Edwards: Rinderpest—Vaccination of Cattle with Goat-adapted Virus.

THURSDAY.—8.30 P.M., UROLOGY. Clinico-Pathological Evening. Cases and specimens.

FRIDAY.—Library closed at 5 P.M. 8.30 P.M., Reception. At 9.15 P.M., Dr. G. Norman Meachen will give a lecture-recital entitled Medical Musicians, illustrated by selections from some of their compositions.

HUNTERIAN SOCIETY.

THURSDAY, April 28th.—7.15 P.M. (at Simpson's Restaurant, Bird-in-Hand-court, E.C.), Annual General Meeting. Mr. James Ogden: Tutankhamen's Tomb. (Lantern lecture.)

MEDICO-LEGAL SOCIETY.

THURSDAY, April 28th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Mr. J. Bright Banister: The Gynæcologist in the Law Courts, to be followed by a discussion.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, April 29th.—8.30 P.M., Prof. F. J. Browne: Maternal Mortality in all Cases of Pregnancy which have Received Antenatal Treatment. A Discussion will follow.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, April 25th to SATURDAY, April 30th.—HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Course in Diseases of Children, mornings only.—INFANT'S HOSPITAL, Vincent-square, S.W. Course in Diseases of Infants, afternoons only.—MAUDSLEY HOSPITAL, Denmark-hill, S.E. Course in Psychological Medicine, afternoons.—LONDON LOCK HOSPITAL, Dean-street, W. Course in Venereal Diseases, afternoons.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. Course in Diseases of the Ear, Nose, and Throat.—(These Courses are open only to Members of the Fellowship.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.6.

MONDAY, April 25th.—10 A.M. to 1 P.M., Gynæcological Ward, Surgical Wards. Genito-Urinary Operations, Skin Department. 2 to 4 P.M., Operations, Surgical Wards. Medical, Surgical, Gynæcological, and Eye Out-patients. 4.15 P.M. (Lecture), Mr. Addison: Tumours of the Breast.

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Department. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Dr. Pritchard: Some Points in the Treatment of Gastric Ulcer.

WEDNESDAY.—10 A.M. to 1 P.M., Medical Wards, Children's Medical Out-patients. 2 to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients, 4.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Genito-Urinary, and Eye Out-patients. 4.15 P.M. (Lecture): Mr. Davenport: Differential Diagnosis of a Red Eye.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 12 noon, Medical Lecture. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Lecture): Mr. Vlasto: Pain in the Ear.

SATURDAY.—9 A.M. to 1 P.M., Throat Operations, Medical and Surgical Wards, Surgical and Children's Medical Out-patients. The lectures at 4.15 P.M. on Mondays, Tuesdays, Thursdays, and Fridays are open to all medical practitioners without fee.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, April 27th.—4.30 P.M., Mr. W. K. Irwin: Some Important Diseases of the Prostate.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.

WEDNESDAY, April 27th.—3 P.M., Mr. A. H. Harkness: Treatment of Chronic Gonorrhœa.

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, April 28th.—4.30 P.M., Mr. E. T. C. Milligan: Fistula.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

THURSDAY, April 28th.—3 P.M., Dr. Anthony Feiling will demonstrate.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, April 27th.—4.15 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Clinical Cases. 5 P.M. Dr. Corsi: Onychia and Paronychia.

ROYAL INSTITUTION, Albemarle-street, W.

FRIDAY, April 29th.—9 P.M., Prof. H. Hartridge: The Rival Theories of Hearing.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, April 25th.—8 P.M., Prof. J. C. Drummond: Recent Researches on the Nature and Function of Vitamins. (Second of three lectures.)

MANCHESTER ROYAL INFIRMARY.

TUESDAY, April 26th.—4.15 P.M., Dr. W. Fletcher Shaw: The Price of Maternity.

FRIDAY.—4.15 P.M., Mr. W. R. Douglas: Demonstration of Surgical Cases.

UNIVERSITY OF BIRMINGHAM.

WEDNESDAY, April 27th.—4 P.M., Mr. C. J. Bond: Some Aspects of Human Biology. (Second of five William Withering memorial lectures.)

SALFORD ROYAL HOSPITAL.

THURSDAY, April 28th.—Dr. C. S. D. Don: Demonstration of Medical Cases.

VICTORIA INFIRMARY, Glasgow.

WEDNESDAY, April 27th.—4.15 P.M., Dr. W. Herbert Brown: Skin Cases.

Appointments

PRICE, MURIEL G., M.B., Ch.B. Belf., has been appointed part-time Medical Officer under the Belfast Maternity and Child Welfare Scheme.

SMITH, A. D., M.B., Ch.B. Edin., senior R.M.O., Sunderland Royal Infirmary.

Certifying Surgeons under the Factory and Workshop Acts: BARTON, N. J., M.D. (Borrowden, Rutland); RUST, F. P., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasg. (Boroughbridge; W. Riding); ARMSTRONG, C. W. W., M.B., Ch.B. Oxf. (Framlingham, Suffolk).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Asst. P.

Altrincham General Hospital.—Jun. H.S. At rate of £120.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.

Brighton, Royal Sussex County Hospital.—H.P. £150.

Chesterfield and North Derbyshire Royal Hospital.—H.S. £150.

Colchester, Essex County Hospital.—Asst. H.S. £120.

Constance-road Institution, Dulwich, S.E.—Asst. M.O. £250.

Dalemere Forest, Cheshire Crossley Sanatorium.—Asst. M.O. £175.

Durham County Hospital.—Two H.S.'s. Each £150.

Ealing Borough.—Asst. M.O.H. £600.

Evelina Hospital for Sick Children, Southwark, S.E.—Ca and Out-patient Officer. At rate of £120. Also Anæsthetis 25 gns.

Halifax, St. Luke's Hospital.—Jun. Res. M.O. £250.

Hospital for Sick Children, Great Ormond-street, W.C.—Secretary. £750.

Hull Royal Infirmary.—H.P. for Sutton Branch Hospital. A rate of £160.

Ilford, King George Hospital.—Two H.S.'s. Each at rate o £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Kidderminster and District General Hospital.—H.S. £150.

Kingston-upon-Thames, Surrey County Council, Mental Hospital Service.—Jun. Asst. M.O. £350.

Leeds General Infirmary.—Hon. Asst. Physician.

Liverpool, Broadgreen Sanatorium.—Med. Supt. £900.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Med. Supt. £250.

London Female Lock Hospital, 283, Harrow-road.—Asst. Non-Resident Surg. Reg. £50.

London Jewish Hospital, Stepney Green, E.—Res. M.O. and Cas. O. Each at rate of £150. Also Jun. Res M.O. At rate of £100.

Lowestoft, St. Luke's Hospital.—Res. Asst. M.O. £350.

Manchester, Abergele Sanatorium.—Jun. Res. M.O. £350.

Manchester, Royal Manchester Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.

Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.

Minehead, Somerset, Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.

National Hospital for Diseases of the Nervous System, Queen square, W.C.—Res. M.O. £200.

National Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. Phys.

Northampton General Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £150.

Oldham Royal Infirmary.—Two H.S.'s. Each at rate of £175.

Queen's Hospital for Children, Hackney-road, E.—Clin. Asst. for Med. Out-patients. 5s. each attendance.

Radcliffe-on-Trent, Notts, County Mental Hospital.—Second Asst. M.O. £450.

Reading, Royal Berkshire Hospital.—Two Cas. O.'s. Each £150.

Retford, Notts, Rampton State Institution.—Fourth M.O. £400.

Rochester, St. Bartholomew's Hospital.—H.P. and H.S. Each £175.

Royal Chest Hospital, City-road, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

St. Alfege's Hospital, Vanbrugh-hill, S.E.—Asst. M.O. £350.

St. Mark's Hospital for Cancer, Fistula, &c., City-road, E.C.—Clinical Asst. for Out-patients' Dept.

Sheffield, Jessop Hospital for Women.—Hon. Pathologist and Hon. Bacteriologist.

Sheffield Royal Hospital.—Two Asst. Cas. O.'s. Also Res. Anæsthetist. Each at rate of £80.

Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.

Wealdstone Parish.—District M.O. £100. Also Public Vaccinator.

Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

Births, Marriages, and Deaths

BIRTHS.

HORDER.—On April 16th, at Ben-lui, Boyne Park, Tunbridge Wells, the wife of Cecil A. Horder, M.B., F.R.C.S., of a son

SMYTH.—On April 10th, 1932, at 22, Wimpole-street, W.1, to Esther, the wife of Michael J. Smyth, M.Ch., F.R.C.S.—a son.

MARRIAGES.

ORMEROD—PATERSON.—On April 16th, at Greenside Church Edinburgh, George Lawrence Ormerod, M.B., Westbury on-Trym, Bristol, to Violet Reid, youngest daughter o the Very Rev. Prof. W. P. Paterson, LL.D., University o Edinburgh.

RUSSELL—WOODWARD.—On April 16th, at St. Mary's Church Wanstead, Brian Russell, M.D., M.R.C.P., to Phylli elder daughter of the late Captain G. B. Woodward an Mrs. Woodward, of Snaresbrook.

DEATHS.

GRAVES.—On April 13th, at the Sussex County Hospita Brighton, Dr. Montague Graves, formerly of the We African Medical Service. Aged 46 years.

LOVEDAY.—On April 13th, suddenly, at Fleet, Hampshire William Dunmore Loveday, O.B.E., J.P., M.R.C.S., Hartfield-square, Eastbourne.

SALTER.—On April 17th, at d'Arcy House, Tolleshunt d'Arcy Essex, John Henry Salter, D.L., J.P., D.P.G.M. (Essex M.R.C.S., in his 91st year.

STEPHEN.—On April 11th suddenly, at Vordighera, Lieut Colonel Guy Neville Stephen, O.B.E., M.R.C.S. Eng D.P.H. Lond., in his 75th year.

STONHAM.—On April 16th, at The Maples, Catherine-road Surbiton, Henry Archibald Stonham, M.R.C.S., L.R.C.P D.P.H., aged 72.

WOOLLETT.—On April 12th, Charles Jerome Woollett, M.D F.R.C.S., of Ambleside, Streatham.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE CITY CORONERSHIP.

THE resignation of Dr. Waldo last month from his o coronerships (for the City of London and for the rough of Southwark) set in train various changes der the Coroners Acts. Section 4 of the 1926 t. which prospectively abolished every franchise onership as from the next vacancy, was expressly cluded from application to the City coroner; t Section 32 of the Act extended to the City coroner- ip, as from the next vacancy, all enactments relating borough coronerships. Thus in effect the City ronership ceases to have any special features except at it is still nominally a franchise coronership, and at it has special statutory jurisdiction under the ty of London Fire Inquests Act of 1888. As to uthwark, previously a franchise coronership for ich the City corporation made the appointment, d the London County Council paid the salary, the risdiction of the coroner will now be merged in the joining London coroners' districts and the franchise ll disappear. There still remains the franchise ronership of the Liberty of the Tower to which the nstable of the Tower has power to appoint, the ndon County Council paying the salary. The pointment of Mr. Danford Thomas, the existing roner for the Liberty of the Tower, to succeed r. Waldo in the City, brings these two adjoining anchises under the same officer's jurisdiction. The neral law being now applicable to the City, it seems at Section 31 of the 1887 Act (expenses of inquests the City and Southwark) has ceased to have effect. The result of these charges on the duties and emolu- ents of the City coroner's office appeared in the commendations made to the City Corporation by s Officers and Clerks Committee. The committee nsidered that the newly appointed coroner need not ive his whole time to his duties, and recommended at his salary be £700 a year, with £100 towards xpenses, exclusive of actual disbursements under the pproved schedule.

BLOOD TRANSFUSION APPARATUS.

A NEW apparatus for the transfusion of untreated lood has been elaborated during the last two years y Dr. Bürkle de la Camp, of Munich. The principle s similar to that of the older Kimpton's tube, but embodies certain notable improvements. The impton's tube was a vertical glass vessel holding 00 c.cm. of blood, clotting being prevented by an ner lining of paraffin wax. The blood entered rom the donor's vein through a needle at the bottom f the tube, and the flow could be encouraged by artially exhausting the vessel with a Higginson's yringe attached to the top. The needle was trans- erred to the recipient's vein, and the blood was llowed to flow in by gravity or could be assisted by eversing the Higginson's syringe and using it as a ump. The paraffin lining had to be renewed every ime the tube was used, and the process of renewal vas not easy. Unless the transfusion was effected apidly, clotting was apt to take place in the needle r at its junction with the tube, so that the operator ad to be an expert. The new apparatus eliminates hese difficulties. The vessel is made of a substance, atented under the name of Athrombit, which s said to be a condensation product of phenol and ormaldehyde, or "synthetic amber," and has been ound to have remarkable powers of retarding coagulation of the blood. It is transparent, hard, but not so brittle as glass, and is a bad conductor of heat, so that the contained blood does not readily cool. The second main advantage of the apparatus is the introduction of the Ainit needles. These are made of steel which is highly polished inside as well as outside, so that again clotting of blood in contact with them is retarded. The top of the vessel is closed with a three-way cock, so that the blood can be pumped into the recipient with a rubber bellows. The apparatus is beautifully finished, and the method appears to be a great improvement on the older one for use by those who believe it is important to have untreated, rather than citrated, blood. The only bar to its free use seems to be the price: for Athrombit is expensive, and there is considerable wastage in the process of making the vessels. The complete outfit is made with containers of two sizes, holding 300 and 600 c.cm. respectively, and the prices for free delivery in the United Kingdom are £15 15*s*. and £17 10*s*. We understand that the apparatus has been in use at the German Hospital for some time, and has given great satisfaction. It is sold by Mr. F. Walser, 269, Gray's Inn-road, W.C., who describes himself as sole agent for Great Britain and the Colonies.

MEDICINE AT SHANGHAI.

THE March number of the *Chinese Medical Journal*, published at Peking, contains an editorial on the Medical Aftermath of the Conflict in Shanghai. In this conflict, says the writer, have perished all the newly erected defensive fortresses of preventive medicine—the hospital of the National Quarantine Service, the Central Hygienic Laboratory, and all the laboratories and health stations operated by the public health department of greater Shanghai. Two well-known medical schools—Tung Chi and the National Medical Colleges—have also suffered considerable damage; and as all these works have been built up at great financial sacrifice their loss is almost irreparable. The article continues:—

> "Shanghai is also going to reap the whirlwind in another form. The overcrowding of the healthy and the sick in the already congested International Settlement present unusual difficulty for preventive medical control. This state of affairs may provoke at any time fatal outbreaks of contagious and infectious diseases from which the environs of Shanghai is seldom free. The public health department of the S.M.C. is not unaware of this danger. Assisted by the citizens' emergency committee, the department is taking all the necessary precautions, but its activities may not be able to reach those who are outside the war refugee camps. Weakened by want, depressed by the horrors of war, and disheartened by a hopeless future, these innocent victims of a 'defensive' war may prove defenceless against any imported virus (now that the National Quarantine Station and the health department of the municipality of Greater Shanghai have been rendered hors de combat) and start an epidemic. With all the hospitals, general and auxiliary, filled to overflowing, once under way it will be difficult to check and there is no knowing where and when it is going to end."

SEASONAL VARIATIONS IN CATS.

THREE workers, E. Armitage, R. J. S. McDowall, and S. N. Mathur [1] have been carrying out experiments on cats in order to establish that there is a seasonal variation in the response of the circulation in these animals to various procedures. They find that in spring the blood pressure rises independently of external temperature, that the respiratory rate is somewhat slower, the oxygen consumption lower, and the response to sensory stimulation increased. They come to the conclusion that all evidence points to the fact that the nervous system is more sensitive in spring; that the parasympathetic is reduced in activity is suggested by the deeper respirations, the constricted pupil, and the difficulty in obtaining reflex slowing of the heart on stimulation of the central end of the vagus at this time of the year. As an interesting corollary to this Sir Edward Sharpey-Schafer relates that when demonstrating in London he often failed to get cardiac inhibition or vagal stimulation, whereas in Edinburgh he was usually successful. He was at first inclined to put this down to difference in climate, but he remembers that he was in the habit of demonstrating this experiment in London during the autumn term and in Edinburgh during the spring term.

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[1] Quart. Jour. Exper. Physiol., 1932, xxi., 365.

VACCINE PROPHYLAXIS IN A CHILDREN'S HOSPITAL.

AN experiment in Prof. Frölich's wards of the Rikshospital in Oslo is recorded by Dr. L. Stoltenberg,[1] whose observations cover two periods. The first, or control period, was between January, 1922, and March, 1925. During the second period, October, 1927, to May, 1931, all the children who were admitted to hospital and who showed no special contra-indication to inoculation, such as fever, were given subcutaneous injections of a polyvalent vaccine made from cultures obtained from the throats of all the children admitted to the Rikshospital over a considerable period. This period included epidemics of influenza as well as free intervals. As a rule, three injections were given each child at intervals of four days. The records of influenzal infections in the first control period were not as complete as in the second period, and the comparison was unfair to the prophylactic treatment, which, nevertheless, is held to have emerged with great credit. In the control period there were 496, and in the inoculation period 487 children. "Influenzal" infection was seen among 56 per cent. of the controls under the age of 1 year, but only among 12·9 per cent. of the inoculated children of the same age; the corresponding figures for children over the age of 1 year were 47 per cent. and 21 per cent. respectively. The incidence of influenzal complications told the same tale. There were 97 cases of bronchitis among the controls, and only 8 among the inoculated; there were 21 cases of pneumonia or broncho-pneumonia among the controls, and only 11 among the inoculated. Otitis occurred in 19 controls, and in 9 of the inoculated. As the incidence of the influenzal diseases showed no marked differences in Oslo in the two periods, it is thought that the comparative freedom of the inoculated children cannot have been due to a general decline of infective virulence.

NEW PREPARATIONS.

T.C.P. B^3 **COLLOIDAL EMULSION** (British Alkaloids' Ltd., Winchester House, London, E.C.) is another form of the T.C.P. preparation (trichlorophenylmethyliodosalicyl) described in THE LANCET of Jan. 11th, 1930 (p. 114). The new colloidal emulsion is intended as a medicament for internal employment in various intestinal conditions, and the percentage composition is given as follows: trichlorophenylmethyliodosalicyl, 1·00; tribromoacetyliodoorthooxybenzoic ac., 2·00; T.C.P. bismuthate, 1·50; colloidal aluminium silicate, 2·00; glycerin, 3·00; distilled water, 90·50. For adults a tablespoonful is taken morning and evening before meals in four tablespoonfuls of water; in acute cases the emulsion can be taken three times a day. The dosage for children is, according to age, from one to two teaspoonfuls in four to eight teaspoonfuls of water, morning and evening, before meals.

ELITYRAN (Bayer Products, Ltd., 19, St. Dunstan's-hill).—This is a preparation of thyroid for use in routine practice, but especially where intolerance has been shown to thyroid preparations generally. The claims of the manufacturers for Elityran over the B.P. preparation are that no unpleasant sequelæ follow, because exact standardisation enables the dosage to be gauged with precision. It is readily soluble, and is issued in tablets of 25 mg. each, in tubes of 30.

ADEXOLIN LIQUID (Glaxo Laboratories, 56, Osnaburg-street, London, N.W.).—A tasteless and odourless concentrated liquid which has been assayed and standardised to contain the vitamins A and D to an amount equivalent to 20 times its own volume in cod-liver oil. It is put forward as a means of administering the vitamins without the use, inconvenient in many cases, of cod-liver oil; for it can be given to persons with sensitive stomachs without producing digestive disturbances, while its use is indicated where there is fat intolerance and acidos The preparation is put up in 8 c.cm. bottles with a dropper affixed to the screw cap, and one drop from this dropper equals exactly half a minim. The suggested doses are, for infants, two drops added to three or more feeds a day; for children, six drops, three times a day with meals; and for adults, ten drops three times a day with meals; but the doctor may considerably increase the doses, if thought desirable, without apprehension.

CAPTURÈ OF WILD RABBITS.

ON an estimate made by Dr. A. H. B. Kirkman in a paper circulated by the University of London Animal Welfare Society,[1] hundreds of thousands of rabbits are tortured in traps every night throughout the winter, in Great Britain alone. The law requires that the traps should be visited once in the 24 hours, but in practice this is difficult to enforce, and in any case animals caught soon after sundown suffer until the next day. Were this the only method of ridding the country of animals regarded as vermin some arguments might be used in favour of it, but there is ample evidence that rabbits are largely regarded as game and preserved. A consensus of opinion obtained from the chief constables in the principal trapping counties is entirely in favour of humane methods and opposed to the use of the steel trap. Poachers make use of netting followed by immediate slaughter, and are able to secure numbers of rabbits in this way. Other humane methods recommended by Dr. Kirkman are the long net, the gate-net, the gate-trap and digging-out; but the method which can be most successfully and kindly used for extermination is poisoning by carbon monoxide gas, obtained from the exhaust pipe of a car and transmitted to the burrows by means of a garden hose. Hundreds of rabbits can be quickl and mercifully killed in this way, and though bodies are not accessible without digging, flesh is not made poisonous by the gas. A more or less humane methods he classifies the snare, the purse-net used with ferrets, and shooting with ferrets or with beagles and beaters. Th Rabbits Bill would give to the county councils power to intervene for the purpose of d rabbits where these have been allowed to mult to the extent of becoming a nuisance to and subclause 1 (7) would prohibit the use of spring trap. Dr. Kirkman suggests that the "spring trap" should bè replaced by "trap jaws adapted to grip the limbs," or "trap to inflict suffering."

INCOME TAX.

MR. W. R. Fairbrother, of Bush House, Ald London, writes: "Your readers may that during this month they will be receiving requiring returns of their income for 1932-33. will save considerable trouble if care is used in comp ing the forms in their entirety, and incidentally doing so your readers will be sure of having all the usual reliefs to which they are entitled. are cases in which less obvious adjustments can secured, such as relief from double as allowance for interest to bank or building soci and setting off loss in one business against profit another. An alternative to the last-mentioned to carry the loss forward, and a decision between two methods requires careful consideration to the loss of benefits by not taking full advantage of possibilities of each individual case. Those of yo readers who marry during the coming year, or ha done so during the past six years, should be to obtain the allowances due as from the date of ceremony, not forgetting that second marriages times give opportunity for claiming double child allowance in the year of marriage."

---

[1] Norsk Mag. f. Lægevid., February, 1932.

[1] The hon. secretaries are Captain C. W. Hume, 14, Hawthorns, London, N.3, and Miss C. M. Knight, 6, F gardens, N.W.11.

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(*Vide Report: Institute of Hygiene, Feb.,* 1927).

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ADDRESSES AND ORIGINAL ARTICLES

ACUTE MASTOID DISEASE.*

SOMERVILLE HASTINGS, M.S. LOND., F.R.C.S. ENG.,
EGEON IN CHARGE OF EAR AND THROAT DEPARTMENT,
MIDDLESEX HOSPITAL.

T is important to remember that for practical poses all acute and chronic infections of the stoid bone follow disease of the middle ear. s possible that some cases of tuberculous mastoid y arise without previous otitis, and cases of hoid and syphilitic disease of the mastoid are o occasionally met with. A severe injury may rt mastoid trouble and I remember having clear out several mastoid as the result of shot wounds during the war. As a general e, however, we may say that mastoid disease is ceded by infection of the middle ear, though this y clear up completely before the mastoid infection ves evidence of its presence.

May I first of all recall a few points in the anatomy this region (Fig. 1). Infection of the middle ear ways takes place by way of the Eustachian tube, that as long as this tube is patent, whatever we may do to the mastoid or middle ear, reinfection can always take place. The mastoid antrum and cells may be regarded as diverticula from the middle ear, and whenever an acute infection of this cavity occurs there is pathological evidence that the mucous lining of the mastoid antrum and cells is also more or less involved. As a rule the mastoid cells get larger the further we pass from the antrum, the largest cell being usually in the mastoid process at its tip.

FIG. 1.

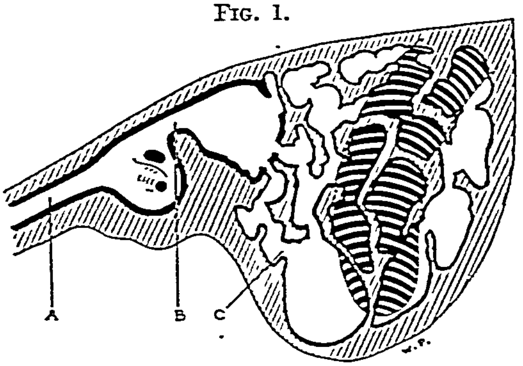

Diagram of structures involved in mastoid disease. From left to right are (A) Eustachian tube, middle-ear (B) aditus, mastoid antrum, and (C) mastoid cells covering the lateral sinus towards the right.

In very acute cases the mastoid infection may be so severe as to cause acute osteomyelitis of the mastoid bone. As a general rule, however, mastoid symptoms calling for surgical treatment only develop when pus is retained under tension, and for this to happen there must be obstruction at one of three points—viz., the Eustachian tube, the aditus, or the communication between the mastoid antrum and one or more of the cells Fig. 1, A, B, and C. Where the Eustachian tube is the seat of the obstruction, the mastoid symptoms will be relieved by a free incision in the membrana tympani. Where the obstruction is in the aditus and is not relieved spontaneously nothing short of opening the mastoid antrum will effect a cure. Cases in which the obstruction is situated between the mastoid antrum and the cells usually come on relatively late, and all trouble in the middle ear and antrum may have cleared up meanwhile.

The Decision to Operate.

Every practitioner must have seen cases of acute otitis in which infection of the mastoid antrum, as shown by tenderness behind the ear, has cleared up without operative interference. No doubt in such cases the pus contained in the antrum or cells has been evacuated via the aditus and discharged through a perforation of the membrane or down the Eustachian tube. It is also alleged that pus contained within a mastoid cell may undergo spontaneous absorption. It is certain that it may erode the bone, reach the surface and form an abscess, which may burst and slowly heal without any help from the surgeon.

A good many years ago when I first became interested in otology, a young woman appeared in my out-patient department with every sign of an acute mastoid. Her temperature was 102° F. and there was a brawny swelling behind her left ear. I explained to her the necessity for operation and painted a lurid picture of the dire results which would follow if she refused. She replied that she had two young children at home and no one to look after them, and that she was prepared to take the risk. Four months later she reappeared in my out-patient department to show me that she was still alive. Her mastoid was scarred but firmly healed and she explained that a linseed poultice had caused the abscess to burst, and that the sinus which remained had slowly healed.

Unfortunately, mastoid disease does not always spread outwards and thus reach the surface as in the case just referred to. Disease of the middle ear and mastoid may spread *inwards* producing facial paralysis, labyrinthitis, or meningitis; or *upwards* producing extradural abscess, abscess in the temporo-sphenoidal lobe of the brain, or meningitis; or *backwards* giving rise to pus around the lateral sinus or septic thrombosis of this sinus, meningitis in the posterior fossa, or a cerebellar abscess. It is less serious when the disease extends *forwards* into cells which are occasionally found in the zygoma, and in this way an abscess beneath the temporal muscle may result. Lastly, an infection of the cells at the tip of the mastoid may sometimes burst inside the insertion of a sternomastoid muscle and form that type of abscess tracking down the neck, which has been associated with the name of von Bezold.

A mastoid operation may have to be undertaken *to save life, to save hearing,* or *to save time:* to save life, by preventing the serious complications just described; to save hearing, because mastoid disease results in destruction or fixation of important structures in the middle ear. So that discharge which comes on acutely and still remains profuse after three or four weeks may sometimes prove a sufficient indication for a mastoid operation. We may also frequently save time by taking matters into our own hands and not leaving them to nature. When mastoid tenderness comes on after all symptoms of acute otitis have disappeared, it is pretty certain that resolution will not take place and the sooner a mastoid operation is performed the better.

It is, however, usually the possibility of serious complications that is the determining factor in deciding upon operation in most cases of mastoid

---

* A post-graduate lecture delivered for the Fellowship of Medicine on March 9th.

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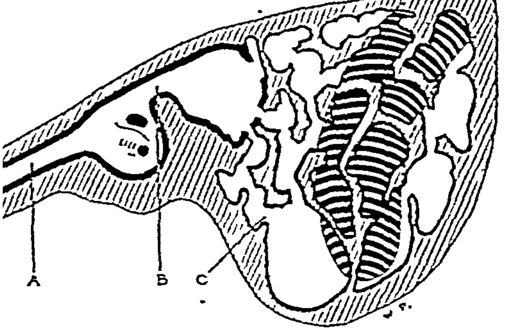

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The Decision to Operate.

Every practitioner must have seen cases of acute otitis in which infection of the mastoid antrum, as shown by tenderness behind the ear, has cleared up without operative interference. No doubt in such cases the pus contained in the antrum or cells has been evacuated via the aditus and discharged through a perforation of the membrane or down the Eustachian tube. It is also alleged that pus contained within a mastoid cell may undergo spontaneous absorption. It is certain that it may erode the bone, reach the surface and form an abscess, which may burst and slowly heal without any help from the surgeon.

A good many years ago when I first became interested in otology, a young woman appeared in my out-patient department with every sign of an acute mastoid. Her temperature was 102° F. and there was a brawny swelling behind her left ear. I explained to her the necessity for operation and painted a lurid picture of the dire results which would follow if she refused. She replied that she had two young children at home and no one to look after them, and that she was prepared to take the risk. Four months later she reappeared in my out-patient department to show me that she was still alive. Her mastoid was scarred but firmly healed and she explained that a linseed poultice had caused the abscess to burst, and that the sinus which remained had slowly healed.

Unfortunately, mastoid disease does not always spread outwards and thus reach the surface as in the case just referred to. Disease of the middle ear and mastoid may spread *inwards* producing facial paralysis, labyrinthitis, or meningitis: or *upwards* producing extradural abscess, abscess in the temporosphenoidal lobe of the brain, or meningitis; or *backwards* giving rise to pus around the lateral sinus or septic thrombosis of this sinus, meningitis in the posterior fossa, or a cerebellar abscess. It is less serious when the disease extends *forwards* into cells which are occasionally found in the zygoma, and in this way an abscess beneath the temporal muscle may result. Lastly, an infection of the cells at the tip of the mastoid may sometimes burst inside the insertion of a sternomastoid muscle and form that type of abscess tracking down the neck, which has been associated with the name of von Bezold.

A mastoid operation may have to be undertaken *to save life, to save hearing, or to save time:* to save life, by preventing the serious complications just described; to save hearing, because mastoid disease results in destruction or fixation of important structures in the middle ear. So that discharge which comes on acutely and still remains profuse after three or four weeks may sometimes prove a sufficient indication for a mastoid operation. We may also frequently save time by taking matters into our own hands and not leaving them to nature. When mastoid tenderness comes on after all symptoms of acute otitis have disappeared, it is pretty certain that resolution will not take place and the sooner a mastoid operation is performed the better.

It is, however, usually the possibility of serious complications that is the determining factor in deciding upon operation in most cases of mastoid

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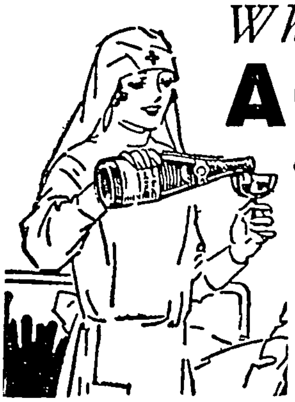
* A post-graduate lecture delivered for the Fellowship of :dicine on March 9th.



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reas in meatal troubles it may be in front as l as behind the ear. In meatal troubles also, movement of the external ear usually causes ı and the movements of the jaw in mastication sometimes even painful, whereas the pinna can pulled forwards or backwards with impunity in stoid disease. The greatest help in diagnosis will, ever, be obtained by a careful examination of the atus. In mastoid disease there will be either changes he membrana tympani or a history of recent otitis, ereas in meatal infections, if a small speculum can pushed through the swollen meatus and the mbrana tympani examined, it will be found to normal. The real difficulty occurs in cases in ich a furuncle follows a neglected otitis, but the agnostic points just mentioned will usually make ings clear.

FIG. 2.

A boil in the left meatus simulating acute mastoid disease.

A post-auricular adenitis may also give rise to fficulty in diagnosis. The swelling is further back, ie external ear is not displaced, and the membrana mpani is normal. Further, a cause for the adenitis ich as an infection of the scalp or pediculi capitas ay be found.

During the war I saw a soldier who was the happy possessor a chronically enlarged post-auricular gland. Whenever was drafted for service in France, he would put a little ndensed milk in his ear, give the enlarged gland a thorough od rubbing to make the skin over it red, and report to his gimental medical officer. After he had been sent to me the base hospital as an acute mastoid for the third time, thought it best, for the honour of the profession, to excise ie gland.

A suppurating cervical gland just below the tip f the mastoid may also give rise to difficulty in iagnosis, especially if a chronic otitis with suppuraon exists as well. An incision will be necessary ı either case, and not *infrequently* when the abscess opened a small necrotic lymphatic gland will be ound surrounded by pus. Cellulitis or erysipelas ommencing in the mastoid region may give rise to emporary difficulty, as *may* also a suppurating ebaceous cyst, or a gumma. I once had to open a ubperiosteal abscess over the mastoid which came n a few *months* after typhoid fever. A pure culture f *Bacillus typhosus* was grown from the pus which t contained.

The Schwartze Operation.

Having decided, then, that an operation is necessary, 're have now to make up our minds what type of peration shall be performed. Whatever else is done he mastoid antrum must be opened, otherwise there s a possibility, or indeed a probability, of a second peration being necessary should another attack of titis media supervene. It is important also that every mastoid cell capable of giving trouble at any future date should be opened up as well. This is by no means always easy unless the situation of those cells which are especially liable to be missed is kept in mind. Mastoids vary very much in structure but certain cells are fairly constantly present and an attempt should be made to find and open up each of the following groups. In the cellular or pneumatic mastoid the largest cell is usually at the tip and this must in all cases be opened. Another important group of cells are found at what is called the sinodural angle—that is to say, at the point of junction of the middle and posterior cerebral fossæ. These cells are sometimes spoken of as the posterior superior group. Less constantly a group of cells extending into the zygoma above and in front are met with and at times these cells pass forward beneath the temporal muscle, and suppuration in them, if it spreads outward, forms an abscess beneath this muscle. A very important collection of cells which must always be searched for is the retrofacial group, deep to the facial nerve. Suppuration in these cells is liable to extend to the nerve itself, and I once saw a case in which meningitis leading to a fatal termination could be clearly traced to some of these cells left unopened at a mastoid operation done many years previously. The emissary or terminal cells, as they are sometimes called, are a superficial group, external or posterior to the lateral sinus groove. In searching for these cells it will be useful to remember that as a general rule the further we get from the mastoid antrum the larger the cells become, so that in opening up the cells of a pneumatic mastoid in a backward direction we cannot feel assured that we have reached the last until some fairly large ones are seen. Less frequently a group of cells—the marginal—are found inside the attachment of the digastric muscle.

The incision which I always make use of for the mastoid operation is made in the groove immediately behind the pinna. It diverges somewhat backwards below so as to be sure of missing the facial nerve. The advantage of this incision is the small amount of scarring that is left. Its disadvantage is the fact that in many cases there is not enough room to get to the most posterior cells through the incision. In this event, it is easy to make a cut at right angles to the incision, at about its centre, and this can be extended as far backward as is desired. My first incision goes through the skin only and the pinna is then dissected forwards and downwards until the cartilaginous meatus is reached. With a sharp knife a crescentic cut is now made immediately behind the cartilaginous meatus down to the bone, and a similar incision extends from the centre of this backwards as far as the skin edge, indeed a little beyond it if the skin is supple enough to be pulled back. With a periosteum elevator the periosteum is now separated from the bone and a mechanical retractor inserted to hold the periosteal flaps apart. Two or three cuts with a sharp chisel parallel to the surface of the bone usually suffice to open up the superficial cells, and unless there are strong indications otherwise, it is best to proceed at once to deal with the antrum, keeping as close as possible to the posterior wall of the meatus in doing so.

The lateral sinus groove is frequently opened in acute cases; very often indeed the disease has already eroded the bone and pus is in contact with the sinus wall. Whenever the sinus wall is seen, the opening in the bone should be immediately enlarged, as a small opening is a source of danger disease. Our object must be to operate early enough to prevent serious complications and late enough to be sure that the disease would not have cleared up had we left things alone. Whilst keeping these two considerations in mind, it is often very difficult in a given case to determine exactly when operation should be undertaken. Indeed it must be said that there are two schools of thought: those who operate early and those who operate late. My old teacher, the late Prof. G. Alexander, of Vienna, used rarely to operate before the sixth week after the commencement of otitis, and I used to wonder sometimes how he managed to hold his hand so long. On the other hand, there are people who open up the mastoid directly it becomes tender at any stage of the disease. There is no doubt that cases operated upon late usually seem to do better. The temperature generally falls rapidly, and the patient often suffers very few constitutional symptoms. On the other hand, it is equally true that one finds the dura of the middle or posterior cerebral fossa exposed much more frequently in the late operation and the way thus opened up for intracranial infection.

Signs and Symptoms.

In the diagnosis of mastoid disease calling for operation, four cardinal symptoms are usually described: *swelling*, *tenderness*, *pyrexia*, and *changes in the meatus*. Unfortunately, however, neither of them is constantly present. Whether there will be swelling of the mastoid or not depends to a considerable extent on the thickness of the bone over the mastoid antrum or cells. In investigating the point it is best to examine the patient from behind and to look out specially for a flattening out of the normal groove which exists between the pinna and the mastoid. Where the external plate of bone is thick, there may be no swelling, although disease is rapidly extending towards the meninges and brain. Tenderness is usually combined with swelling and when the two are present and the differential diagnosis is certain, operation is indicated except perhaps occasionally in the very earliest stages of the disease. Fever is a much more variable factor and of less importance diagnostically in acute than in chronic mastoid trouble. It may be absent entirely, where the disease is caused by *Streptococcus mucosus*; nevertheless, a continued rise of temperature to 101° or 102° after a free incision of the membrana tympani is very suggestive of mastoid disease requiring operation.

Most important perhaps of all are changes in the meatus, which must in all cases be carefully examined. It is best to inspect both before and after syringing, for wax and debris may easily be mistaken for bulging of the drum or posterior meatal wall. On the other hand if we examine only after syringing it is impossible to say whether the redness of the handle of the malleus is the result of syringing or of disease of the middle ear. *A sagging of the posterior superior wall of the meatus close to the drum indicates almost certainly that the disease has spread to the mastoid and that operation will be necessary.* In most cases in which the mastoid operation is under consideration there will of course be obvious changes in the middle ear: deafness, redness of the drum, or perforation and discharge, but it is very important to remember that while disease in the middle ear may have cleared up, disease in the mastoid may be advancing. It is extraordinary how rapidly middle-ear disease, even after a perforation of the membrane, may subside, so that operation on the mastoid may be called for

hearing, provided and only provided, th
history of middle-ear trouble a week or

In addition to these general indicatio
certain special symptoms which indicate t
of immediate operation. Grave toxæmi
tions of infection spreading inwards t
brain or paralysis of the facial or ext
muscles, come into that category as d
or convulsions in children, vomiting, or
a sudden and profuse discharge from th
a clear indication for operation.

I remember some years ago seeing a man
otitis a few weeks previously and whose ear d
not clear up. He was sent to me by a co
opinion as to whether an operation was nec
The man walked into my consulting-room, sa
and complained of nothing but an occasio
Then he told me that to his intense surprise
before seeing me he had felt a dripping in h
up his handkerchief, and that almost a teas
had quickly poured out. I wrote to my c
man has an extradural abscess around the la
you must operate at once," and this was foun

The middle ear and mastoid are clo
with bony walls and if a sudden and prof
of pus takes place, it must have been
in some expansile region, and the c
place is within the cranium.

In deciding when an operation is re
graphic examination of each mastoid is
assistance. About 88 per cent. of heal
are strictly symmetrical, and where th
cellular and the disease unilateral, an X ra
may be of real assistance in the diagnosi
as the infected mastoid appears much r
than that on the healthy side. Pus is
to the X rays than air; and bony septa,
course more opaque, are destroyed in ma
if at all extensive. Therefore, instead
showing in the negative dark spaces
paler lines we have a much more unifor
if the mastoid is diseased. The b
examination is also helpful at times.
must be thoroughly cleansed, and the
seen escaping through a perforation c
only examined. The presence of *Streptoc*
usually means marked destruction of th
few symptoms, and usually indicates t
operation. The combination of the pneu
Micrococcus catarrhalis also indicates a
infection which is unlikely to resolve
help of the surgeon.

Differential Diagnosis.

The differential diagnosis of mastoid
means always easy. It is important
that an infection of the meatus or a b
produce extremely severe pain and a
constitutional disturbance. The inflam
spread outward posteriorly between the
meatus and the bone, and produce œde
mastoid, and even an abscess in th
It will help in the diagnosis to reme
swelling behind the ear due to meatal t
on early, usually within a day or two of th
ment of symptoms, whereas except in th
cases, mastoid disease needing operatio
to develop. The displacement of the ea
troubles is said to be usually downwards a
whilst in meatal infections the ear is gene
forwards only. This sign is by no mea
as will be seen from the accompanying
(Fig. 2). Of more value is the fact that th

ost entirely abandoned in favour of the previous thod of taking the drug by snuffing.

t had been found necessary to set aside a certain mber of beds for the treatment of these malarial es in a ward detached from the main hospital lding, and when the malarial admissions ceased se beds were still maintained for the reception any heroin addict who might voluntarily seek mission for treatment to assist him in his attempt break off the heroin habit. The number of addicts king admission has always far exceeded the ailable accommodation, but no selection has been de.

The average length of stay in hospital of heroin dicts has been from 10 to 15 days, and various ethods have been tried for alleviating the dismfort of the patient during the withdrawal period. o attempt has ever been made to retain a patient hospital for treatment against his will, and this le appears to have a markedly beneficial effect on e mental attitude during the withdrawal period. has been observed that dissatisfaction shown y one patient with the treatment rapidly infects hers unless steps are immediately taken to check it; kewise approval expressed by a patient influences ose around him equally quickly, these patients eing very readily affected by suggestion. The sults obtained from any form of treatment in a mall series of cases may therefore be very misleading.

We have observed that the severity of withdrawal ymptoms on any given line of treatment does not lways bear a definite relationship to the daily mount of the heroin previously used or to the luration of the addiction, appearing in some cases o be affected most markedly by the mental make-up f the individual and his attitude towards this trying eriod.

The total number of these cases admitted for reatment from April, 1929, till the present date as been 461. Some of them apparently sought admission because through loss of occupation they could no longer afford enough of the drug to satisfy their wants. Many of them, however, came because of a genuine desire to break off the drug habit and, having done so, to keep off it for all time. A few seemed only to wish to break off the drug temporarily, since they realised that by so doing they could return to its use and once more for a time obtain the same pleasurable effect as they had originally experienced.

Methods of Administration and Types of Addicts.

Apart from the large number of intravenous heroin addicts studied in 1929, the usual method of taking the drug has been by snuffing, the daily amount being taken all at one time, or, more frequently, divided into two to four doses. No ill-effects on the nasal mucosa have been observed but in many cases the septum is found to be perforated as a result of a previous cocaine addiction at the time when cocaine was readily obtainable in Egypt. Occasionally one meets an addict who states that although snuffing is his usual method, he occasionally employs the intravenous or subcutaneous route to obtain either a greater effect from the same amount of the drug or a more immediate result.

The type of heroin addict we have had to deal with has varied very greatly. A number of them are obviously hereditary mental degenerates in whom it is apparent, from the first, that no benefit can result from any form of treatment; on the other hand a certain number are obviously extremely keen to get rid of the habit, which they realise only too well is ruining both themselves and their families. Apart from those found to be suffering from subtertian malaria, we have failed to observe any marked ill-effects on the physical condition of addicts as a result even of long periods of addiction with large doses. Some patients, because of having insufficient money to purchase necessary food, show marked signs of emaciation, but the majority are quite up to the average physical standard of non-addicts of the same class, and those showing emaciation rapidly regain their previous weight when given a suitable diet. This good bodily state indicates that the majority would be physically quite fit to resume their pre-addiction rôle in life provided they could be freed from the habit. The mental condition of these patients, on the other hand, shows marked impairment, their will-power being much weakened and their mental and moral standard much reduced. This mental change very markedly influences the response to treatment during the withdrawal period and subsequently. We have found no evidence to suggest that these addicts have indulged more than the non-addict in excess of tea or coffee before developing the heroin habit. The pupils of the heroin addict on first admission, while he is still under the effects of the drug, have not shown any abnormal contraction; they are usually moderately dilated and react normally to light. Constipation has not been complained of as a result of heroin addiction.

A Group of One Hundred and Twenty Cases.

A detailed study was made of this group of addicts to determine certain points of interest, such as the age, occupation, duration, amount of the drug taken, and the cause of addiction.

Age and occupation.—Of these addicts, 75 per cent. were between the age of 20 and 30 years, 15 per cent. between 31 and 40, and 10 per cent. above 40. Their occupations were very varied, but the largest number 23, gave their means of livelihood as street hawkers, an occupation which is not infrequently practised in Cairo solely as a means of allowing an individual a certain if not very honest means of acquiring sufficient money to enable him to indulge in his expensive dope habit; clerks came next 19, cab and taxi drivers 12, mechanics 10, carpenters and farmers 9 each, waiters 5, tailors, butchers, barbers, watch-makers 4 each, painters, students, cooks 3 each, ticket-collectors and journalists 2 each, and a policeman, a teacher, a typist, and a groom.

Daily dose of drug.—The daily amount of the drug used was difficult to arrive at with any degree of accuracy either from the weight of the drug taken or from the price paid for it, because heroin as sold in Egypt is usually adulterated to varying degrees and also the price charged by different traffickers seems to vary considerably. However, a very rough estimate was made from the addicts' statements of price and weight. Thirty-two considered that they were using less than 1 g. daily, 51 between 1 and 2 g., 14 between 2 and 3 g., 9 between 3 and 4 g., 5 between 4 and 5 g., 7 between 5 and 6 g., and 2 between 6 and 7 g.

Period of drug addiction.—Information obtained from this group of 120 addicts showed that the drug had been used for the following periods: less than one year, 20; one year, 5; two years, 14; three years, 10; four years, 7; five years, 17; six years, 14; seven years, 23; eight years, 12; nine years, 8; ten years, 3; more than ten years, 5.

Addiction to other drugs before heroin.—A history of no other addiction was obtained in 40 of the in case of bleeding. Should the sinus be injured or its wall so softened that it gives way, it will be necessary to at once obliterate the sinus by packing tightly between its wall and the bone. If the removal of bone has not been free enough it may be possible in trying to do this to block the external opening without obliterating the sinus, and in this case bleeding will take place within the skull, causing symptoms of increased intracranial pressure and even death. An increase in rapidity and decrease in volume of the pulse are warning symptoms, but if sufficient bone has been removed there should be no danger of this accident occurring.

Very occasionally sloughing of the sinus may take place after the operation.

I remember very well observing a grey patch on the sinus wall at a first dressing, two days after operation. While I watched it, the slough suddenly gave way and furious hæmorrhage took place. I packed between the sinus wall and the bone in both directions, but a rise in temperature to 104° six hours later, and a slight rigor, demonstrated the necessity for ligature of the internal jugular vein in the neck. Fortunately the patient recovered.

Where the middle cerebral fossa, or the lateral sinus groove has been opened, I usually prefer to leave the wound open at any rate, below, packing it with flavine 1 : 1000 and changing the dressings on the second day. We find that the pain of dressing can be much relieved by soaking the gauze packing in a little 5 per cent. Novutox just before it is removed.

Some surgeons claim good results by allowing the wound to fill with blood clot and sewing up completely; or by leaving bismuth iodoform paste in the wound. The first method appears to me contrary to all the principles of surgery, and I have had to remove so much BIPP inserted by other surgeons that I have made up my mind to put in none myself.

The Conservative Operation.

There is, however, a modification of the ordinary Schwartze operation described above, which I often make use of when the cranium has not been opened and no complications are to be expected. It was Küster, I think, who first recommended the removal of the posterior bony wall of the meatus almost to the level of the drum, but it was Charles Heath who introduced what he called the "conservative" operation for patients with chronic ear discharge. This operation I rarely find of value in chronic cases, but in acute mastoids it is really useful. The posterior wound is closed at once, and usually heals by first intention and the mastoid is drained through an enlarged meatus. In clearing away the bone no attempt is made to preserve the posterior meatal wall, which is removed almost to the level of the drum with chisel or cutting forceps. The cartilaginous meatus then tears away easily at the back, and the drum can be seen. A small scalpel is inserted through the meatus which is split along its lower border from within outward. The knife is then directed upwards at the junction of the meatus and concha, and before it is withdrawn the crus helicis is nicked. The posterior wall of the meatus can now be bent upwards and to help it to retain its position better it is wise to dissect off from it most of the cartilage, leaving, of course, the skin intact. It is usually now quite easy to insert the little finger into the meatus and this is replaced by a short length of soft rubber tube of the same size, which keeps the meatal flap in position. Looking through this tube the membrana tympani can be seen in the extreme front and the mastoid cavity behind, and through this tube the wound is packed with gauze. I usually retain the tube in the ear for about te days, changing it, of course, with each dressing, and at the end of this time if the posterior wound has heal the ear can be packed tightly with gauze, a piece of dry wool placed on top, and all bandages dispensed with. It is necessary to pack the wound tightly with ribbon gauze for several weeks while epithelium extends from the edges of the cut meatus, to cover in the granulations which have lined the mastoid cavity. This modification of the operation fo acute mastoid disease renders impossible the formation of a sinus behind the ear, which may take many months to heal, but as the dressing is apt to be a little painful until the tube is dispensed with, it is more suitabl for adults than children.

HEROIN ADDICTION IN EGYPT

AND ITS TREATMENT DURING THE WITHDRAWAL PERIOD.

BY A. G. BIGGAM, O.B.E., M.D. EDIN., M.R.C.P. LOND.,
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M. A. ARAFA, M.B. CAIRO, M.R.C.P. LOND.,
MEDICAL TUTOR AT THE HOSPITAL;
AND
A. F. RAGAB, M.B. CAIRO,
MEDICAL RESIDENT REGISTRAR AT THE HOSPITAL.

SOME idea of the prevalence of narcotic
in Egypt can be obtained from a study of
Pasha's report[1] in which he shows that of 24
inmates of the State prison on Nov. 29th, 192
no less than 7130 had been convicted under the la
on narcotics—i.e., 5317 for possession of drugs
1813 for trafficking in them. He states that,
the majority of traffickers are themselves
at least one-quarter of the total population of
prisons are addicts. He considers that prob
these convicted persons constitute only 1 per
of the addicts of Egypt, so that there are
about half a million addicts in Egypt in a
of 14 millions.

Information acquired by the Central N
Intelligence Bureau of Egypt, from the
of 200 intelligent addicts, as to the nature of th
narcotics used in Egypt, shows that no less th
138 used heroin as compared with 20 using
14 hashish, 12 morphine, 8 manzoul, 6 mixtures,
2 cocaine.

We became especially interested in the study
heroin addicts early in 1929 owing to the
number of them admitted under our care
from high fever and marked ill-health brought ab
by infection with subtertian malaria. It
became apparent that all these heroin addicts f
to be suffering from malignant malaria had
employing the intravenous route for the
of their drug, and that the malarial infection
being transmitted from one addict to another
blood remaining in the syringe. A report on
malarial infection amongst drug addicts has al
appeared,[2] [3] [4] and consequently we shall only
here that the news soon got about amongst ad
that a risk was run in the employment of the in
venous method, and that this route has now

iptoms the sleeplessness was found in many cases persist to a marked degree and for a long period, l was not infrequently given as the cause of relapse er leaving hospital. The general weakness, mus- ar pain, and depression were also very persistent. thdrawals effects were most marked during the t three or four days but often continued to a ser degree for a month or more, the feeling of haustion often rendering the individual incapable resuming his occupation. Sneezing, yawning, l lacrymation were most evident during the first ee days, but sometimes persisted up to the seventh eighth day, or even longer. Colic, diarrhœa, usea, and vomiting were not usually severe during thdrawal, being complained of by less than half e patients, and where diarrhœa was present the mber of motions was never excessive, averaging m three to seven daily. The appetite was usually pidly regained after the intestinal symptoms had bsided.

Various Methods of Treatment.

Various lines of treatment were tried during the thdrawal period, the patients as far as possible ing kept in ignorance of them. The results were ry carefully recorded to enable us, if possible, form a definite opinion on their relative merits.

0 intravenous heroin addicts suffering from sub- rtian malaria were treated for their malarial infection, ie heroin being suddenly withdrawn in most cases, araldehyde being given as required, and in a few ses small amounts of morphine being added where ie condition of the patient made it desirable. The sults were good except that the patients often ffered considerable discomfort during the first ree days as a result of the sudden withdrawal. None showed serious cramps, convulsions, or respira- ory symptoms during the withdrawal period. Paral- ehyde was found a useful hypnotic, its taste and mell having a beneficial psychic effect.

On completing the treatment of the malarial roup, other groups were treated as follows: utohæmotherapy was carried out in 152 cases; lister fluid injections as recommended by Modinos n 40; normal saline injections as controls in 37; nsulin treatment in 20; and special substitution treatment in 102 cases.

AUTOHÆMOTHERAPY.

This mode of treatment had been extensively practised in certain skin and other diseases in some cases with favourable results, so not unnaturally it was considered worth a trial in the treatment of heroin addiction. Very encouraging results have been reported,[2] and we decided to try it in a series of cases so as to be able to form some definite opinion of its value in alleviating the withdrawal symptoms and in lessening the tendency to relapse after the withdrawal period. No selection of patients was made; patients were allowed as full a diet as they desired, their bowels were kept open, and they were encouraged to drink plenty of fluids. Blood was obtained from a superficial vein, usually in the arm, and injected deep into a muscle, usually in the gluteal region. Daily blood injections were carried out, the doses increasing from 2 c.cm. to 60 c.cm.; the course usually consisted of seven injections. The patients were blindfolded while the injections were being made and as far as possible kept in ignorance of the procedure. The immediate effect of an injection varied in different patients. Some who were previously restless and in great mental distress immediately went to sleep for one or two hours; but this sedative effect was merely psychic, for the same result was obtained by merely pricking the vein and injecting normal saline instead of blood into the muscle. Patients on autohæmotherapy were given paraldehyde and other sedatives at night where restlessness was marked.

The effect of blood treatment on the withdrawal symptoms varied markedly, according, as far as could be ascertained, to the patient's belief or otherwise in its efficacy. This belief was often influenced by good or bad reports on the treatment given by other patients who had already completed their course. Not infrequently a number of consecutive cases would be treated without complaining of any marked discomfort during the withdrawal period, but these might be followed by an almost equal number who showed the greatest distress and discomfort during the same treatment, no other cause apart from their mental attitude being discovered to account for the difference.

This treatment did not seem to influence in any way the tendency to relapse in spite of the claim of certain observers,[5] for even patients who had received very large doses of blood relapsed almost immediately after leaving hospital. The following is the record of one such case.

A male clerk, aged 28, had previously been addicted to alcohol and cocaine for one year, followed by heroin snuffed for five years, with an interval of heroin injections for two months; the daily dose was 1·5 g., and the cause of addiction sexual. The patient stated that he had previously been treated in a home run by two doctors in Heliopolis, but had relapsed at once after discharge because of pain in the bones, numbness, exhaustion, and sleeplessness. The general condition of the patient was moderate; his nasal septum showed an extensive perforation as a result of his previous cocaine habit.

Blood injections (autohæmotherapy) were given: on the first day 20 c.cm. were removed from a vein and put into the muscle of the buttock; on the second day 30 c.cm. were injected; on the third day 40 c.cm.; on the fifth day 50 c.cm.; this dose was repeated daily up to and including the eighth day. The withdrawal symptoms were marked colic, slight diarrhœa, lacrymation, sneezing, yawning, very poor sleep, and feeling of exhaustion. After the fourth day the symptoms improved, but sneezing, lacrymation, and yawning persisted to a lesser degree, and exhaustion and sleeplessness were still troublesome. The patient was discharged after 15 days still complaining of weakness. He reported within a month that he had relapsed owing to sleeplessness and the feeling of exhaustion.

After a very careful survey of the daily notes made during and after the withdrawal period—on 152 heroin addicts treated by blood injections, the results did not lead us to believe that this method of treatment had any special value in lessening either the withdrawal symptoms or the tendency to relapse. While certain patients on this treatment suffered little inconvenience during the withdrawal period, others who had previously taken the same amount of heroin over a similar number of years obtained little or no relief.

AUTOSEROTHERAPY (PHLYCTENOTHERAPY).

Modinos, working in Alexandria, read a paper in January, 1930, before the Egyptian Medical Society on a new line of treatment discovered by him for the cure of addicts; his treatment has since been commented on in certain journals.[6] He announced that in 1929 he had discovered, whilst treating patients for other diseases by blister fluid, that he had by chance cured them of their drug habit. His method is to apply a blister 8 cm. square to any region of the body, but preferably to the lower chest or upper abdomen, and after 12 to 14 hours to withdraw the serum from this blister, the amount varying from 5 to 20 c.cm. This he aspirates with a large bore needle and injects immediately, as it is, under the neighbouring skin; he recommends that group, and previous addiction to alcohol in 20, cocaine in 35, cocaine and alcohol in 12, and opium and hashish in 13. The addicts with a previous alcoholic and cocaine history not infrequently stated that they had first commenced using cocaine for its sobering effect after an overdose of alcohol, and that, once they had experienced the cocaine sensation, they persisted till heroin, becoming more easily procurable, took its place. The small number of addicts giving a history of previous hashish addiction is surprising in a country where smuggling of this drug is considered to be so prevalent, and might be taken to indicate that the hashish habit does not specially predispose to other more serious drug habits. Cocaine shows the highest figure for other previous addiction, but as this drug is now very difficult to obtain in Egypt addiction to it is seldom met except in those who, from their occupation or otherwise, have special facilities for obtaining it —e.g., two dentists were recently treated by us for the cocaine habit.

Cause of addiction.—The great majority of the cases of heroin addiction give as the reason for commencing the drug the fact that they had been informed that it had a marked sexual effect. They state that its chief effect is prolongation of the sexual act, but that this action is usually obtainable only for about a month or even less, being followed by a total loss of sexual desire and impotence. A few state that they have failed entirely to obtain any aphrodisiac effect, sexual desire being lost immediately. Some have stated that after they had ceased to derive any sexual effect they discontinued the drug for a time, and, on recommencing it, again obtained the initial sexual result. Most addicts state that, by the time the sexual action of the drug has ceased, it has usually become so essential to them that they cannot discontinue its use.

In the series of 120 cases here considered, 70 gave as the cause of addiction the desire for sexual effect; 34 stated that they commenced the use of the drug in order to forget their miserable existence or become oblivious of some mental worry; 7 took it to be companionable while sitting in a café with someone who was already an addict; 7 stated that they took it primarily to replace cocaine; one took it for sleeplessness and one to allay the feeling of fatigue. Not a single addict in the total of 461 cases stated as the cause of his addiction that the drug had first been ordered for some medicinal purpose by a doctor. It has also been very exceptional to get a history of the drug having originally been taken to allay the pain of some organic disease.

Withdrawal Symptoms.

During the treatment of all our cases careful daily records were maintained showing the symptoms complained of by each case during each day of the early withdrawal period. The majority of the addicts had had a dose of the drug immediately before admission and consequently showed little or no withdrawal symptoms during the first day. The first withdrawal symptoms to appear were usually psychic, with restlessness, excitability, and irritability in greater or lesser degree. A relationship between the intensity of these psychic symptoms, the dose, and the duration of the addiction was not always apparent, some severe cases of long standing showing these symptoms less markedly than more recent ones taking smaller doses of the drug. On an average, however, the long-standing cases suffered more severely during the withdrawal period. Within a few hours of the onset of unrest and irritability, physical symptoms began to appear, the most marked being sneezing, yawning, lacrymation, colic, diarrhœa, vomiting, and pains in the limbs; the intensity of these later physical symptoms was usually proportional to that of the initial psychic symptoms. Withdrawal symptoms reached their acme in one to two days, persisted unallayed for another day or two, and then, by the end of the third or fourth day, even without any treatment, usually showed definite signs of amelioration. This natural improvement after the third or fourth day, [illegible] wrongly attributed to some [illegible] and false hopes may consequently be based on this treatment.

Form Used for Recording Withdrawal Symptoms.

Day of admis. and treatment by B.F.I.	Gastro-intestinal symptoms.	Muscular (M) and nervous (N) symptoms.	Psychic symptoms.
2nd day 10 c.cm.	Sickness; vomit 3 times; colic + +; stools 6.	M. Weak. + + numb. + + pain legs and knees + + N. Lacry. + sneez. + + yawn. + +	Markedly excited, irritable, severe exh., slept 1 hour.
3rd day	Vomit 6 times; colic + +; stools 4 times; app. bad.	M. Pain knees + + weak. + + numb. + N. Lacry. + + sneez. + + yawn. + +	Excited, flushed face, staring eyes, marked exh., slept 1½ hours.
4th day	Vomit twice; colic + +; stools 4; app. bad.	M. Weak. + + numb. + pains legs + N. Lacry. + + sneez. + + yawn. + + headache +	Less irritable and excited but exh., slept 2 hours.
5th day 15 c.cm.	Vomit nil; colic +; stools 2; app. fair.	M. Musc. weak. + + N. Lacry. + sneez. + yawn. +	Mental state markedly improved still exh., slept 4
6th day	Vomit nil; colic nil; stools 2; app. good.	M. Weak. + Pain legs and knees + + N. Lacry. + sneez. + yawn. + headache +	Mentally quiet exh., slept 4 ho
7th day	Vomit nil; colic nil; stools 1; app. good.	M. Still weak. N. Lacry. + sneez. + yawn. +	Exh., slept 5
8th day 10 c.cm.	Vomit nil; colic nil; app. good.	M. Still weak legs. N. Lacry. nil, sneez. nil, yawn. +	Exh., slept 4
9th day	Nil.	M. Weak. + N. Nil.	Exh., sleep still n good.

App. = appetite; weak. = weakness; numb. = [illegible] lacry. = lacrymation; sneez. = sneezing; yawn. = y exh. = exhausted.

This case was under blister fluid treatment (B.F.I.). shows the maximum symptoms during the first three. as occurs in cases under no special treatment. With symptoms here show no amelioration from the blister treatment.

The withdrawal symptoms in order of freq and severity were: (1) sleeplessness and excitem (2) general weakness and pains in the muscles, [illegible] ally around the knee-joint; (3) sneezing, [illegible] and lacrymation; (4) headache; (5) colic, [illegible] nausea, and vomiting; (6) numbness and [illegible] in the extremities; (7) general depression, exhaus and irritability; (8) loss of appetite. Where [illegible] active treatment was undertaken to relieve th dually reduced, and the patient finishes all drug atment by the end of the seventh day. Occasion-, however, where a patient has shown any marked omfort during any stage of the withdrawal period, as been arranged that he shall have his previous 's treatment repeated instead of going on with the t day's reduction, but this change was seldom nd to be necessary.

his method of substitution treatment we consider st satisfactory, especially where the confidence the addict can be obtained, and it seldom fails make his withdrawal period comfortable. It ails very frequent treatment and many injections ramuscular or hypodermic, but this all tends have a beneficial mental effect on this type of lividual and is consequently more advantageous than ierwise. We have not found that these patients mplain of pain from the intramuscular injection 50 per cent. magnesium sulphate solution, as often curs when this solution is employed to increase the lative action of morphia in non-addict patients. a few cases luminal was given intramuscularly stead of orally, but no special advantage was served. The bowels were kept open during eatment, and a generous diet was allowed as soon as petite returned; patients were also encouraged drink plenty of fluids. No signs of any toxic fect were observed from the drugs used in this bstitution method of treatment, but no beneficial fect on the tendency to relapse appeared to result.

SPECIAL SUBSTITUTION TREATMENT.

First day.—8 A.M.: Luminal grs. 2. 9 A.M.: Morphine 02 g.; mag. sulph. 2 c.cm., 50 per cent. solution intra-uscular; strychnine gr. 1/200; atropine gr. 1/200 (½ amp. ich). 12 noon: Morphine 0·02 g., mag. sulph. 2 c.cm., 0 per cent.; strychnine gr. 1/200; atropine gr. 1/200. P.M.: Strychnine gr. 1/200; atropine gr. 1/200 (½ amp. ach). 6 P.M.: Strychnine gr. 1/200; atropine gr. 1/200; araldehyde draught 60 c.cm. (contains 4 c.cm. paral.). P.M.: Strychnine gr. 1/200; atropine gr. 1/200; morphine ·02 g.; mag. sulph. 2 c.cm., 50 per cent.; luminal grs. 2; il. colocynth. et hyoscyamus 2.

Second day.—6 A.M.: S.M.S. (solution of mag. sulph. by nouth) 90 c.cm. 8 A.M.: Luminal grs. 2. 9 A.M.: Morphine ·02 g.; mag. sulph. 2 c.cm., 50 per cent.; strychnine r. 1/200; atropine gr. 1/200 (½ amp. each). 12 noon: Strychnine gr. 1/200; atropine gr. 1/200. 3 P.M.: Strych-ine gr. 1/200; atropine gr. 1/200. 6 P.M.: Strychnine r. 1/200; atropine gr. 1/200; paraldehyde draught 60 c.cm.) P.M.: Strychnine gr. 1/200; atropine gr. 1/200; morphine)·02 g.; mag. sulph. 2 c.cm.; luminal grs. 2; pil. colocynth. et hyoscyamus 2.

Third day.—6 A.M.: S.M.S. 90 c.cm. 8 A.M.: Luminal grs. 2. 9 A.M.: Strychnine gr. 1/200; atropine gr. 1/200 ½ amp. each). 12 noon: Strychnine gr. 1/200; atropine gr. 1/200 (½ amp each). 3 P.M.: Strychnine gr. 1/200; atropine gr. 1/200 (½ amp each). 6 P.M.: Strychnine gr. 1/200; atropine gr. 1/200; paraldehyde draught 60 c.cm. 9 P.M.: Strychnine gr. 1/200; atropine gr. 1/200; morphine 0·02 g.; mag. sulph. 2 c.cm.; luminal grs. 2; pil. colocynth. et hyoscyamus 2.

Fourth day.—6 A.M.: S.M.S. 90 c.cm. 8 A.M.: Luminal grs. 2. 6 P.M.: Strychnine gr. 1/200; atropine gr. 1/200; paraldehyde draught 60 c.cm. 9 P.M.: Strychnine gr. 1/200; atropine gr. 1/200; morphine 0·01 g.; mag. sulph. 2 c.cm., 50 per cent.; luminal grs. 2; pil. colocynth. et hyoscyamus 2.

Fifth day.—6 A.M.: S.M.S. 90 c.cm. 8 A.M.: Luminal grs. 2. 6 P.M.: Strychnine gr. 1/200; atropine gr. 1/200; paraldehyde draught 60 c.cm. 9 P.M.: Strychnine gr. 1/200; atropine gr. 1/200; mag. sulph. 2 c.cm., 50 per cent.; luminal grs. 2; pil. colocynth. et hyoscyamus 2.

Sixth day.—6 A.M.: S.M.S. 90 c.cm. 6 P.M.: Paraldehyde draught 60 c.cm. 9 P.M.: Luminal grs. 2; pil. colocynth. et hyoscyamus 2.

Seventh day.—6 A.M.: S.M.S. 90 c.cm. 6 P.M.: Paraldehyde. 9 P.M.: pil. colocynth. et hyoscyamus 2.

Eighth day.—6 A.M.: S.M.S. 90 c.cm.

N.B.—(*a*) If marked symptoms or signs of toxic effect from atropine or other drug are noticed, the dose should be reduced or discontinued. (*b*) Daily hot bath at 4 P.M.

We do not propose to consider here the questions of relapse or rehabilitation in drug addicts, where the mental make-up of the individual is so important. All we have attempted to do in treatment has been to study carefully certain methods for which claims of cure have been put forward and to state the results these methods have given in our hands. The results obtained from the sudden withdrawal of the heroin and the substitution of other drugs to replace it have given us such encouraging results that further trial of these methods seems indicated, remembering always the importance of gaining the confidence of the patient during any form of treatment.

Conclusions.

Heroin is much the most prevalent drug of addiction in Egypt, the habit seldom resulting from its administration for medicinal purposes, but usually from its repeated employment as an aphrodisiac. The habit, once established, necessitates the continuation of the drug long after all sexual effects have ceased. Addiction to heroin affects much more the psychic than the physical state of the individual, all the higher faculties being impaired, self-control diminished, and the addict becoming a mental and moral wreck. Some of the addicts studied by us, before acquiring the heroin habit, were hereditary mental degenerates, only too ready to fall a victim to any vice that might come their way; any line of treatment was almost certain to fail to benefit them. Others, however, were mentally quite normal before addiction, and in these the results of treatment were more encouraging. The physical condition of the addicts was, on the whole, surprisingly good, even despite a history of having taken the drug over prolonged periods.

The withdrawal symptoms were always more marked and troublesome during the first three or four days, and were influenced greatly by the mental attitude of the patient to, and his faith or otherwise in, the treatment being given. Some individuals had no real desire to stop the drug, while others were determined at all costs to do so, these latter appreciating and responding to any effort made to help them during the withdrawal period. Experiments with so-called "cures"—autohæmotherapy, autoserotherapy, and insulin—have in our hands failed to show any resultant benefit to the addict either during the withdrawal period or subsequently.

We have found, however, that the substitution therapy employed by us lessens the withdrawal symptoms very markedly, rendering this troublesome period comparatively comfortable in the great majority of cases.

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NATIONAL HOSPITAL, QUEEN-SQUARE.—Last year this hospital received 1570 in-patients, whose average stay was 41 days, as compared with 47 days in 1930. The waiting-list was consequently much reduced The average weekly cost per occupied bed was £3 14*s.* 8½*d.*, an increase of 6*s.* 9½*d.* over the preceding year. Many of the buildings being old the cost of repairs is heavy, and expenditure exceeded income by £3485, little more than half the deficit of 1930. In the medical school the lectures and demonstrations have been attended by 384 men and women students from various parts of the world, and applications for admission to the school of massage are greatly in excess of its capacity.

the syringe should be at body temperature. He states that no reaction follows the injection, and advises that it should be repeated in four days, and again four days later. He recommends that sedatives should be given and the drug of addiction gradually reduced. He claims that the withdrawal symptoms are very slight, and states that he has cured many drug addicts by this method, the patients having no desire to return to the drug after discharge from hospital.

We had the opportunity of examining one of Modinos's patients treated on these lines, and this individual stated that he had been entirely cured of his heroin habit and had become as healthy as he had ever been before his addiction. This patient's account of his sensations during the treatment is interesting. He states that immediately after the first blister fluid injection was made on the right side of the body he felt quite strong on that side, the other half of the body however remaining as weak as before; the second injection was made a few days later on the left side, and at once both sides became equally strong and he felt quite normal. He stated that he continued to be sleepless for some days, but after a course of treatment by sedatives he became quite normal in all respects.

The cure in this case appeared to us from the history to have been brought about largely by suggestion. We decided to try a series of cases on this line of treatment and have now observed 40 cases under blister fluid medication, the fluid being obtained from a cantharides blister, usually applied to the lower chest or abdomen, the amount of fluid injected varying with the size of the blister from 5 to 20 c.cm., and the technique employed closely following that of Modinos. We found that the application of the blister usually caused considerable local pain and inconvenience to the patients, and the treatment was consequently not popular, many addicts asking to have it discontinued. We gave at least two and usually three injections of blister fluid with an interval of two or three days between each, but obtained no better results in the 40 cases so treated than in a series of control cases treated at the same time with the application of blisters, and the injection, not of serum, but of normal saline. We found that the withdrawal symptoms were not relieved, and that relapses occurred as frequently as with the cases on the normal saline treatment.

The following is the history of a case treated by us with autoserotherapy.

A male messenger, aged 30, had snuffed heroin for two years—probably 2 g. daily. There had been no previous attempt to stop the drug. The cause of the addiction was sexual. His general condition on admission was good, and the pupils were not contracted. Treatment commenced the day after admission; a cantharides blister was applied to the right side of the abdomen; 10 c.cm. of fluid were obtained and injected. Three days later a blister was put on the left abdomen and 15 c.cm. of blister fluid injected; three days later 5 c.cm. were injected. The patient complained of considerable discomfort as a result of the application of the blisters, and asked to have this form of treatment discontinued.

All the withdrawal symptoms were very marked and sedatives were required. The man left hospital after 15 days' treatment and reported again for further treatment a month later, stating that he had relapsed within a few days of leaving hospital.

We have now had a number of heroin cases under our care who stated that they had previously undergone blister treatment by Modinos and that they had relapsed very soon after completing the "cure." A careful study of our own cases has convinced us that blister fluid treatment carried on as nearly as possible on the same lines as Modinos has in our hands entirely failed to produce any beneficial effect in heroin addicts.

A SECRET REMEDY.

Treatment of heroin addicts has been carried out in a home in Heliopolis by two doctors, no accurate information being available as to the nature of the treatment. One case of heroin addiction was sent by us, at their request, to undergo their cure; he returned after five days to report that he was entirely cured, and again one month later to say that he had now relapsed and was as bad as ever. During the past two years we have had under our care a number of cases who have stated that they had previously undergone treatment by these two doctors, only to relapse soon afterwards. One group of five cases reported to us, stating that they had undergone the cure at Heliopolis under arrangements made by a high official in the Government service, and all five informed us that they had relapsed within ten days of completing the so-called "cure."

INSULIN TREATMENT.

Recently it has been stated that heroin addiction causes interference with the normal output of the internal secretions of the ductless glands, the pancreatic hormone being especially affected, and cl have been made that great benefit results in cases from the administration of insulin. We treated a series of 20 heroin cases with insulin, mencing with 20 units on the day after a and giving sufficient glucose to prevent hypoglycæmia. The same dose is repeated on the following day; on the third and fourth days 30 units of are given, on the fifth and sixth days 20 units are administered twice a day, and on the seventh and eighth days 25 units are given twice daily, the of glucose being increased proportionately. Sedatives have also been administered. We have been unable to detect any benefit from this line of tre the gastro-intestinal, muscular, and nervous sy being as marked as on treatment without and the feeling of exhaustion and weakness also uninfluenced. Blood-sugar estimations been carried out on these patients before com treatment, and no change from the normal h been found in their sugar tolerance.

SPECIAL SUBSTITUTION THERAPY.

A series of 102 heroin cases has been treated by on a special substitution scheme, heroin being sto at once and sedative drugs given to alleviate withdrawal symptoms. Under this line of treatment the patient can be kept comfortable and free from symptoms during the breaking-off. The sleeplessness which is usually such a marked distressing feature of the period following drawal can be completely relieved in 80 per of the cases, six to eight hours' sleep being obtain each night even during the first four days. N infrequently patients who were reported as n sleeping satisfactorily during the night were sound asleep on visiting them during the The 20 per cent. reported as not obtaining goo sleep usually slept for from two to four during the first three or four days after stop the drug. The gastro-intestinal symptoms we never troublesome on this substitution and were present in only about half the cases, then only to a very slight degree. Sneezing, yaw and lacrymation were very slight and caused li or no inconvenience. Under this scheme of treatment the sedative drugs, morphia, luminal, in muscular magnesium sulphate, and paraldehyde true acromegaly were absent in both, and active cretion of the breasts, with gross symmetrical largement in Case 1, were the only manifestations a functional disturbance.

OTHER PUBLISHED CASES.

A case occurring in a man, aged 43, presenting eatures similar to those described above, with both reasts enlarged and secreting milk, but with no ther evidence of endocrine disturbance, was described y Haenel. At autopsy, a tumour of the pituitary, escribed as an angiosarcoma, was unexpectedly ound. A number of cases in acromegalics are ecorded, but most of these are in women who have reviously been pregnant and have suckled infants, often at a period not far removed from the onset of ymptoms. Because of the ease with which secretion can be obtained from the breasts that have recently unctioned, most of these cases are of doubtful significance. Thus the patient recorded by Gajkiewicz n 1893 had well-developed acromegalic features, and secretion from both breasts. She had borne and suckled six healthy children, but had suffered from amenorrhœa for seven years before the onset of the symptoms. In 1896 Fazio described a similar case in an acromegalic woman who had weaned a child only a short time before coming under observation. More recently similar instances have been recorded by Maguire, Lodge, and Bab. Lactation in an acromegalic woman who had never been pregnant was described by Carnot and Bouttier. Acromegaly in the male with enlargement of breasts which did not secrete was noticed in a boy aged 18 by Shallcross. Roth and Henschen and Nager have recently added to the literature two instances of true secretion of hypertrophied breasts occurring in men suffering from acromegaly, and Bailey records an autopsy on a man suffering from gigantism, in whom the pituitary was grossly hypertrophied and the enlarged breasts contained excess of gland tissue.

It is now well recognised that lesions of the pituitary may produce manifestations resulting from disturbance of the vegetative centres in the hypothalamic area, and that possibly the reverse may also occur. In this connexion Riese's case, of a woman who developed secretion of the breasts as well as parkinsonism after an attack of epidemic encephalitis, is of particular interest. Riese considered that the mammary activity resulted from disturbance of the vegetative nuclei in this part of the brain. It has elsewhere been shown (Krestin) that changes in cutaneous secretion are a characteristic feature of post-encephalitis parkinsonism, and that these are probably associated with lesions of the hypothalamic region. As the breast is a modified cutaneous gland, the occurrence of such cases is, theoretically at least, not surprising.

Before discussing the relationship of the pituitary and mammary glands, the other endocrine conditions in which spontaneous lactation is known to occur may be mentioned. Disease of the ovary and testis forms the largest group. In ovarian conditions, enlargement of the breasts has been frequently observed as part of a generalised precocious or excessive somatic and sexual development. The cases such as those of Lucas, Southam, and Harris, were girls from 3 to 5 years of age who had sarcomatous or teratomatous growths of the ovaries, and who increased in stature out of all proportion to their ages, grew pubic hair, and menstruated. The breasts enlarged but were not observed to secrete milk. In Southam's and Harris's cases. removal of the growth was followed by a return to normal.

In males, gynæcomasty has been observed in a variety of lesions affecting the testis. Cooke described the case of a man, aged 26, whose breasts enlarged and secreted colostrum. At autopsy a chorion-epithelioma of the testis was found with secondaries throughout the body. An example of simple hypertrophy of the breasts without actual secretion in a man with malignant teratoma of the testis was also mentioned by Bailey. Of equal interest are cases of gynæcomasty associated with atrophy of the testis following trauma. Six such cases are recorded by Apert and Decléty, and one by Condomine. Whatsoever may be the physiological inter-relationship between the functions of the testis and breasts, that between the male genital tract as a whole and the mammary activity is illustrated by the occasional results of prostatectomy. Gynæcomasty following this operation is recorded in two cases—by Oppenheimer and by Kondoléon. Petit de la Villéon describes a similar instance in which a carcinoma occurred in one of the enlarged breasts.

Since considerable modification of the secondary sex characteristics is often a feature of tumours of the suprarenal cortex, alteration in mammary activity might well be expected in such circumstances. Actually, either hypertrophy or atrophy of the mammæ may occur. Holmes's case was that of classical virilism with atrophy of the breasts. Case 7 of Winkler's series was similar. Bulloch and Sequeira, however, record a girl, aged 11, who developed great obesity, the masculine type of hirsutes, cutaneous striæ atrophicæ, and enlargement of both breasts. As no mention is made of mammary secretion, it is probable that the breast enlargement was just part of a generalised macrosoma.

The appearance of female secondary sex characters is not a feature of suprarenal tumours in males. Weber. however, describes the occurrence of an extensive malignant hypernephroma of the suprarenal cortex of a man, aged 27, who developed enlargement of both breasts, from which milky fluid could be expressed. At autopsy both breasts contained active glandular tissue. A similar case in a young man whose breasts enlarged whilst the testes atrophied, with resulting impotence, was recorded by Bittorf. At the necropsy of this patient, recorded by Mathias, there was a malignant cortical hypernephroma with secondaries, and active secreting tissue in both mammæ.

Changes in sexual development are also known to occur in patients having pineal tumours. In most of the recorded cases, definite changes in the breasts were not usually found. In one case described by Oestreich and Slawyk, a psammosarcoma of the pineal in a boy of 4 years was followed by great increase in size as well as by great precocious development of the genital organs. The breasts enlarged a little and secreted colostrum.

DISCUSSION.

The significance of spontaneous lactation in lesions of the ductless glands is difficult to assess, since the factors controlling the normal physiological process are still imperfectly understood. Although in some of the recorded cases, particularly in those of cortical *suprarenal tumours*, the mammary changes may have been part of a generalised macrosoma, it was shown that in other instances, as in the pituitary lesions here recorded, a true excessive mammary activity was present, as distinct from a generalised body disturbance.

The control of normal lactation is probably chemical in nature, and takes place through the blood stream. The evidence excluding a somatic nervous control is conclusive (Golz and Ewald; Ribbert) and need not

SPONTANEOUS LACTATION ASSOCIATED WITH ENLARGEMENT OF THE PITUITARY.

WITH REPORT OF TWO CASES.

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NUMEROUS examples of spontaneous lactation in both sexes have been recorded, and its occurrence in animals is well known to veterinary surgeons. In most of these cases, however, the appearance of mammary activity in either sex was the response to a mechanical stimulus, the usual and most powerful one being suckling. Thus Knott records three unmarried nursemaids who had never been pregnant, and who, after repeatedly suckling their mistress's infants, secreted milk from their breasts. In each case the secretion ceased when the stimulus was removed. The youngest instance of this kind, recorded by Baudelocque, was that of a girl, aged 8 years, who suckled a baby brother for four weeks. Knott and others have also described the condition in the male. Heape discusses lactation in virgin bitches, and Marshall describes the production of mammary activity by regular mammary stimulation, in a mare which had never foaled.

Apart from suckling or mechanical stimulation, mammary activity, either in the male or virgin female, is usually associated with pathological changes in some part of the endocrine apparatus, association with disease of the organs of reproduction being most generally found. Obvious increase of mammary function, apart from pregnancy, is not a common feature of pituitary disease. For this reason a description of two such cases is given and followed by a brief résumé of the literature throwing light on the relationship of the ductless glands to mammary secretion.

DESCRIPTION OF CASES.

CASE 1, an unmarried woman aged 25, first came under observation in April, 1930. For some months she had noticed that the breasts seemed larger and heavier than usual, and for six months her attention had been directed to secretion from the nipples by the staining of her clothes. Pressure of either nipple readily and constantly produced a copious milky fluid, which at no time was blood-stained. Apart from a feeling of fullness and heaviness, there was no pain in the breasts.

For some years the patient had suffered from attacks of headache, usually frontal and occasionally temporal, generally coming on in the mornings. These had become more severe during the past twelve months, but the attacks were of short duration. Both vision and hearing were good. There was never any vomiting. The patient was always tall and well-built, but thought she had been getting bigger and heavier during the last few months. Records of height or weight were not kept. There had been no change in size of hats, gloves, or shoes. The skin was thought to be more coarse and more hairy than usual. The catamenia had been regular since the age of 14. Two years before coming under observation they became irregular, and six months later ceased completely; there has been amenorrhœa ever since.

The past history and family history were uneventful. The patient had never been pregnant. Both parents, brother, and sisters were all tall and of large stature.

The patient was well-built and healthy looking; weight 12 st. 8 lb., height 5 ft. 11 in. There was no undue prominence or enlargement of the bony ridges of the skull, lower jaw, hands, or feet. Conformation of the hard palate, teeth, and alveolar margins was normal. The tongue was not increased in size. Radiograms of the hands showed no abnormality of phalanges. The skin of the arms and legs was somewhat coarse and fairly hairy. Lineæ atrophicæ were absent. The pupils were equal and reacted briskly to light and accommodation. Fundi were normal. No ocular palsies were noted. The visual fields for white were full, those for red and green were somewhat contracted but within normal limits (Mr. A. Sorsby). No abnormality was detected in the cranial nerves or in the rest of the nervous system. The cardiovascular system was healthy; blood pressure 120/80. The lungs were clear. Liver and spleen not palpable. No abdominal tumour could be felt. The pelvic organs were normal and the hymen intact.

Both breasts were enlarged, heavy, and somewhat nodular, resembling those of a lactating woman; the skin over them showed a few enlarged veins. No tumour could be felt. Compression readily yielded a secretion resembling milk. A test-tube could be filled by the patient in two or three minutes from either breast. Qualitative analysis of the fluid showed the presence of fat, lactose, and casein as found in human milk. Microscopically the centrifugalised deposit contained numerous fat globules, a few leucocytes, and many granules resembling colostrum corpuscles.

The urine was normal in amount and contained no albumin or sugar. The Wassermann reaction was negative and the blood count normal. The blood-sugar curves after ingestion of 50 g. and 100 g. of glucose respectively were within normal limits, and sugar did not appear in the urine throughout these tests. Cushing's thermic reaction was negative. Skiagrams of the skull showed no obvious deformity of the lower jaw, and no enlargement of air sinuses. The sella turcica was enlarged in depth and in antero-posterior diameter. Measurements of sella: antero-posterior diameter 21 mm., greatest depth 17 mm., which exceed Cushing's maximum measurements for a normal fossa, namely 15 mm. and 10 mm. respectively.

The patient has remained under constant observation. She was placed on a restricted carbohydrate diet. For the first six months X ray therapy to the skull and to the breasts was tried without effect. During the next [illegible] months thyroid and whole pituitary gland was given by the mouth. The headaches have diminished in fre[illegible] and severity, and there has been a loss of weight of 15 [illegible] There has been no alteration in the general appearance or of the size of the jaw, hands, or feet. A recent [illegible] of the skull showed no noticeable alteration in the size of the pituitary fossa. For some time there was no appreciable change in the secretion from the breasts, but during the la[illegible] six months it has become definitely less.

CASE 2, a married woman aged 32, first came [illegible] observation in May, 1929. She had been married four [illegible] a half years, but had never been pregnant. The [illegible] had always been scanty and irregular, and had comp[illegible] ceased for thirteen months. About August, 1928, [illegible] noticed some pain in both breasts, which she thought [illegible] increased in size. A doctor whom she consulted about thi[illegible] expressed some fluid from both nipples, and sugge[illegible] pregnancy as a cause. Examination at a later date, [illegible] showed that the uterus was of normal size, as it was at [illegible] subsequent examinations. Soon after this, she [illegible] of severe frontal and occipital headaches, either [illegible] or throbbing in character, which would come on [illegible] once or twice a week and last most of the day. These headaches were not accompanied by nausea, and at n[illegible] time excited vomiting. Except for some general [illegible] and a rather worried state of mind (chiefly the result of her breast condition) there were no other symptoms. [illegible] was no alteration of the physical features, nor any [illegible] in size of the hands, feet, or head and face.

The patient was a bright and intelligent, well-built, and healthy looking woman; height 5 ft. 5 in., [illegible] 10 st. 6 lb., with a well-proportioned development of the whole body. The skin was smooth; striæ atrophicæ and excessive hirsuties were absent. Examination of the cardiovascular, respiratory, and nervous systems failed to reveal any abnormality. The fundi were healthy and [illegible] visual fields within normal limits. The urine was clear. Th[illegible] was no abnormality of the pelvic or abdominal organs.

The breasts, which were not disproportionately large, were pendulous, rather nodular, and a little tender on palpation. A thick, creamy fluid, microscopically possessing the features of colostrum, could be expressed from either nipple on slight pressure.

The skull was radiographed and, whilst the b[illegible] appearance and sinuses were normal, the pituitary fossa was distinctly enlarged. There was no erosion or a[illegible]tion of bone. Measurements for the pituitary fossa on [illegible] lateral radiogram taken under standard conditions (at [illegible] distance of 6 ft. from the tube) were 19 mm. and 13 [illegible] for the antero-posterior diameter and depth respectively. The patient's condition remained unaltered for [illegible] months, after which she left the country.

In both cases [illegible] of the reproductive apparatus, or [illegible] stimulation [illegible] be excluded with reasonable certainty. Althou[illegible] there was some doubtful alteration in the g[illegible] somatic development in the first case, the feature true acromegaly were absent in both, and active cretion of the breasts, with gross symmetrical largement in Case 1, were the only manifestations a functional disturbance.

OTHER PUBLISHED CASES.

A case occurring in a man, aged 43, presenting atures similar to those described above, with both reasts enlarged and secreting milk, but with no ther evidence of endocrine disturbance, was described y Haenel. At autopsy, a tumour of the pituitary, escribed as an angiosarcoma, was unexpectedly ound. A number of cases in acromegalics are ecorded, but most of these are in women who have reviously been pregnant and have suckled infants, ften at a period not far removed from the onset of ymptoms. Because of the ease with which secretion an be obtained from the breasts that have recently unctioned, most of these cases are of doubtful ignificance. Thus the patient recorded by Gajkiewicz n 1893 had well-developed acromegalic features, nd secretion from both breasts. She had borne nd suckled six healthy children, but had suffered rom amenorrhœa for seven years before the onset f the symptoms. In 1896 Fazio described a similar ase in an acromegalic woman who had weaned a hild only a short time before coming under observation. More recently similar instances have been recorded by Maguire, Lodge, and Bab. Lactation in an acromegalic woman who had never been pregnant was described by Carnot and Bouttier. Acromegaly in the male with enlargement of breasts which did not secrete was noticed in a boy aged 18 by Shallcross. Roth and Henschen and Nager have recently added to the literature two instances of true secretion of hypertrophied breasts occurring in men suffering from acromegaly, and Bailey records an autopsy on a man suffering from gigantism, in whom the pituitary was grossly hypertrophied and the enlarged breasts contained excess of gland tissue.

It is now well recognised that lesions of the pituitary may produce manifestations resulting from disturbance of the vegetative centres in the hypothalamic area, and that possibly the reverse may also occur. In this connexion Riese's case, of a woman who developed secretion of the breasts as well as parkinsonism after an attack of epidemic encephalitis, is of particular interest. Riese considered that the mammary activity resulted from disturbance of the vegetative nuclei in this part of the brain. It has elsewhere been shown (Krestin) that changes in cutaneous secretion are a characteristic feature of post-encephalitis parkinsonism, and that these are probably associated with lesions of the hypothalamic region. As the breast is a modified cutaneous gland, the occurrence of such cases is, theoretically at least, not surprising.

Before discussing the relationship of the pituitary and mammary glands, the other endocrine conditions in which spontaneous lactation is known to occur may be mentioned. Disease of the ovary and testis forms the largest group. In ovarian conditions, enlargement of the breasts has been frequently observed as part of a generalised precocious or excessive somatic and sexual development. The cases such as those of Lucas, Southam, and Harris, were girls from 3 to 5 years of age who had sarcomatous or teratomatous growths of the ovaries, and who increased in stature out of all proportion to their ages, grew pubic hair, and menstruated. The breasts enlarged but were not observed to secrete milk. In Southam's and Harris's cases, removal of the growth was followed by a return to normal.

In males, gynæcomasty has been observed in a variety of lesions affecting the testis. Cooke described the case of a man, aged 26, whose breasts enlarged and secreted colostrum. At autopsy a chorion-epithelioma of the testis was found with secondaries throughout the body. An example of simple hypertrophy of the breasts without actual secretion in a man with malignant teratoma of the testis was also mentioned by Bailey. Of equal interest are cases of gynæcomasty associated with atrophy of the testis following trauma. Six such cases are recorded by Apert and Decléty, and one by Condomine. Whatsoever may be the physiological inter-relationship between the functions of the testis and breasts, that between the male genital tract as a whole and the mammary activity is illustrated by the occasional results of prostatectomy. Gynæcomasty following this operation is recorded in two cases—by Oppenheimer and by Kondoléon. Petit de la Villéon describes a similar instance in which a carcinoma occurred in one of the enlarged breasts.

Since considerable modification of the secondary sex characteristics is often a feature of tumours of the suprarenal cortex, alteration in mammary activity might well be expected in such circumstances. Actually, either hypertrophy or atrophy of the mammæ may occur. Holmes's case was that of classical virilism with atrophy of the breasts. Case 7 of Winkler's series was similar. Bulloch and Sequeira, however, record a girl, aged 11, who developed great obesity, the masculine type of hirsutes, cutaneous striæ atrophicæ, and enlargement of both breasts. As no mention is made of mammary secretion, it is probable that the breast enlargement was just part of a generalised macrosoma.

The appearance of female secondary sex characters is not a feature of suprarenal tumours in males. Weber, however, describes the occurrence of an extensive malignant hypernephroma of the suprarenal cortex of a man, aged 27, who developed enlargement of both breasts, from which milky fluid could be expressed. At autopsy both breasts contained active glandular tissue. A similar case in a young man whose breasts enlarged whilst the testes atrophied, with resulting impotence, was recorded by Bittorf. At the necropsy of this patient, recorded by Mathias, there was a malignant cortical hypernephroma with secondaries, and active secreting tissue in both mammæ.

Changes in sexual development are also known to occur in patients having pineal tumours. In most of the recorded cases, definite changes in the breasts were not usually found. In one case described by Oestreich and Slawyk, a psammosarcoma of the pineal in a boy of 4 years was followed by great increase in size as well as by great precocious development of the genital organs. The breasts enlarged a little and secreted colostrum.

DISCUSSION.

The significance of spontaneous lactation in lesions of the ductless glands is difficult to assess, since the factors controlling the normal physiological process are still imperfectly understood. Although in some of the recorded cases, particularly in those of cortical suprarenal tumours, the mammary changes may have been part of a generalised macrosoma, it was shown that in other instances, as in the pituitary lesions here recorded, a true excessive mammary activity was present, as distinct from a generalised body disturbance.

The control of normal lactation is probably chemical in nature, and takes place through the blood stream. The evidence excluding a somatic nervous control is conclusive (Golz and Ewald; Ribbert) and need not be considered here. Whether the vegetative nervous system can be completely excluded from taking part —at any rate in disease—is by no means certain. Starling elaborated the view that normal lactation could be divided into two phases. During the first half of pregnancy it consisted of an anabolic or assimilatory process in which glandular hyperplasia and hypertrophy were prominent features. The second phase was a katabolic or disassimilatory process in which active growth ceased and milk was produced. The first phase was considered to be dependent upon the uterine contents during pregnancy, and could be artificially induced in virgin rabbits by the injection of fœtal extract (Lane-Claypon and Starling). By removing the uterus of the rabbit before the end of the first half of pregnancy, this phase can be terminated. Termination of pregnancy during the second half initiated the disassimilatory process accompanied by the secretion of milk. According to Starling, this results from the removal of the fœtal hormone. His results were confirmed by Foa and Biedl and Königstein. Halban considered that neither fœtus nor ovary were essential for lactation, and concluded that the placenta supplied the necessary stimulus. An important place has been assigned to the corpora lutea by Bouin and Ancel, who were able to effect an arrest of mammary development by destroying all the corpora lutea in pregnant rabbits. On the whole, much of the experimental evidence is contradictory, and definite conclusions cannot be reached.

In growths of the testis and ovaries, and especially the teratomata, the malignant cells may themselves behave like fœtal and placental elements. The cause of the gynæcomasty following on testicular atrophy or prostatectomy must remain a matter for speculation. There is no evidence that the suprarenal cortex has any direct effect on mammary activity. In most of the cases referred to in this group, the breast enlargement was probably part of a general increase in size of all the body and viscera. The known changes which occur in the sex glands in lesions of this kind may, however, provide some explanation for the appearance of true spontaneous lactation in some of the cases of cortical suprarenal tumour.

That there is some physiological association of the pituitary and mammary activity has long been recognised. Ott and Scott first demonstrated the galactogogic effect of secretion from the posterior lobe in a nursing goat, and this was confirmed by Schäfer and Mackenzie. The action of the posterior pituitary extract is to increase the secretion of an already active mammary gland, that is, to stimulate the disassimilatory phase. It cannot, however, initiate this activity.

In more recent years, evidence has accumulated to show that the anterior pituitary lobe can undoubtedly influence, and even induce mammary activity under experimental conditions. Whether it can do so independently or only in the presence of ovarian tissue, is still a moot point. Frei and Grüter, and Stricker and Grüter produced such activity, accompanied by lactation, in virgin mammals by the injection of anterior pituitary extract. They believed that it was necessary for the mammary glands to be influenced by a corpus luteum, the presence of which, however, was not essential at the time of making the injection. Evans and Simpson were able to show that this action was possessed by the aqueous alkaline extracts rich in growth hormone. With a similar extract, a combination of acromegaly and colostrum secretion was produced in a female dog by Putnam, Benedict, and Teel. These results were confirmed by Parkes who, however, was successful only in female animals in whom ovarian tissue was preserved, and he concluded that the anterior pituitary took effect through luteal tissue. It had already been shown by earlier workers that the presence of luteal tissue was not essential, and this has since been corroborated by Corner and Nelson and Pfiffner.

Thus there appears to be an established relationship between the anterior lobe of the pituitary and mammary activity, at least under experimental conditions. Whether the power to stimulate lactation is inseparably vested with the growth hormone, or whether a separate "mammary" hormone will eventually be isolated, is a matter which must await further experimental work. So far, mammary activity has not been induced by the use of the aqueous acid maturity-stimulating hormone isolated by Evans and Simpson. The possible influence of the important vegetative centres of the hypothalamic region has been referred to. The clinical and experimental evidence of this is too scanty to permit of any speculation regarding any direct effect on the mammary gland itself, or any indirect effect arising from the anatomical relationship of the pituitary to this region.

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SPEECH AND INTELLIGENCE.

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CORRECT and distinct speech requires a definite ntal effort, and of this effort many aments are capable (Max Müller). Binet goes so far as to give classification of the mentally defective using speech his basis: idiots do not use words coherently, ibeciles use words but not coherent sentences, and e feeble-minded can use ordinary speech.

Speech is made up of words, and words are the mbols or counters of thought, only very limited ought being possible without speech or words. s one's speech is defective so probably has been e's intelligence—innate activity of mind, atten-on, memory, powers of association or ideation, and rtainly so is defective one's capacity for inter-ange of thought with one's fellows. As the result f the isolation so produced the possibilities of ucation are correspondingly limited.

DEVELOPMENT OF SPEECH IN MENTAL DEFECTIVES.

Some words are generally expected to be used by hildren about the age of 18 months, and a child s considered late in talking if there be not many ords in use by the third year.

I have recently reviewed 84 consecutive and ersonally-examined cases of mentally defective hildren. "Notified cases" are those of low grade—he idiot, imbecile, and feeble-minded notifiable to he local mental deficiency authority. "Certified ases" are of higher grade, the feeble-minded ot so notifiable. These 84 children commenced o talk according to the following Table (I.):—

TABLE I.

Commenced to talk at age—	At or just under 2 years.	2–3.	3–4.	4–5.	5–6.	6–7.	7–8.	8–9.	Still not talking.	Age not ascertainable.	Total.
Notified cases	3 or 8.8%	4	7	—	2	2	4	3	7	2	34
Certified	13 or 26%	12	16	5	—	—	—	—	—	4	50

TABLE II.

Age at date of observation ..	$5\frac{1}{12}$	$7\frac{1}{12}$	$7\frac{2}{12}$	$7\frac{7}{12}$	$7\frac{7}{12}$	$7\frac{9}{12}$	$7\frac{9}{12}$	$7\frac{9}{12}$	$7\frac{11}{12}$	$8\frac{1}{12}$	$8\frac{2}{12}$	$8\frac{2}{12}$	$9\frac{10}{12}$
Age when commenced to talk ..	4–5*	1½	2	2–3	2–3	1½	1½	2–3	2–3	2	2–3	2–3	3–4
Years been talking	1	5½	5	5	5	6	6	5	5	6	6	6	6

* This child proved to be educable in a special school and has therefore been included in the high-grade class.

The development of speech in most cases of mental deficiency is late; and the lower the mentality, the later tends to be the development of speech. The possibility of speech still being acquired by the low grades after a long waiting, even for eight or nine years, must be recognised.

Amongst the low-grade children, articulation was clear in only nine cases (26 per cent.), while it was slovenly, slurring, or jerking in character in five, and lalling in nine others. Speech was confined to one or two words in four children, and remained entirely absent in seven (only one being a deaf-mute). Twenty-five (50 per cent.) of the higher grade children had a normally clear articulation. Four were whispering children, and in two articulation was in a slow monotone. There was a hesitant stammer in one child, and the slovenliness of articulation due to enlarged tonsils and adenoids in another. One child was slurring in speech, while another, aged 5 years, who only commenced to talk three months before observation, showed a bulbar incoördination. Lalling was present in 13 children, to such an extent in two cases as to give idioglossia (so-called). In another, aged 15 years, the articulation was slovenly with clipping of words, again giving idioglossia. The remaining child at 6 years of age could say only a few words.

PARTICULAR DEFECTS OF SPEECH.

Lalling is the substitution of one consonant for another, and is common enough in the child who is just acquiring his speech. Its persistence in my cases has been noted in those who show a general mental inertia, and in another group of children who were proved to be defective in powers of general observation and attention. The persistence of lalling in the 13 higher grade cases is shown in Table II.

Lalling, then, tends to persist amongst feeble-minded children much beyond the normal. I have come to regard its presence of significance, although remaining certain that it is no pathognomonic sign of feeble-mindedness. I have noted it in several otherwise bright and normal children at the ordinary schools. Mental defect accounts for its persistence often enough, but it is equally true that some normal children retain their "baby-talk" to a much later period than the average. There is probably much truth in the insinuation that it may be seen in "those spoilt by improper training keeping them infantile" (J. Kerr).

Echolalia, on the contrary, I have never encountered except in the mentally defective. In this condition the child repeats the exact words addressed to him, or in extreme cases even words or phrases used in his presence, instead of giving an intelligent answer. It must be due to want of interpretation of the language spoken, indicating lack of any ability for or effort at thought at all, and be of the nature of an automatism. Six low-grade children and one higher grade child remained subject to echolalia, while one other higher grade child had now lost the stigma. "She used to repeat all we said to her without giving us any answer."

From one's speech can be gauged one's *stock of ideas*, and, to a less extent, the very nature of one's intellect. In the Stanford revision tests, at age 5, a child is expected to define in terms of use, or better than use, four of these words, chair, horse, fork, doll, pencil, table; at age 8 he is expected to define in terms superior to use, two of these words, balloon, tiger, football, soldier, and to know 20 of a list of 100 words which have been specially and methodically selected from a dictionary. In 37 (74 per cent.) of my certified children such tests alone would have given a mental age in agreement with that found by applying the complete scale of tests. In nine (18 per cent.) the estimates would have been too low, and in four only (8 per cent.) they would have been too high.

The usual meaning of *idioglossia* is a form of speech so defective, the consonants being so altered or so elided, or there being such a slovenliness of articulation, or such a clipping of words, that the afflicted appears to be talking a language peculiar to himself. This occurred in my idiots and imbeciles not at all, in the feeble-minded three times, and I have noted it in ordinary school-children on not less than ten occasions. It has been suggested that it may be due to some inherent inability to make prolonged use of the faculties of attention and observation which are necessary for the acquisition of correct speech (Leonard Guthrie). But in these ordinary school-children, if this be so, it has been the only evidence of any inherent weakness of attention and observation. Rather, it seems to be a motor affection, for it is certainly present in some otherwise normal children for some time after they have a complete sensory path for speech, for these children have normal understanding of normal spoken language. I can confirm the prognosis "it is invariably good" (J. Collier), and the observation "fortunately, improvement is steady once it begins" (Kerr.)

But the above "*idioglossia*" is not really an individual language and is entirely different from the idioglossia, a language of one's very own, which may be present in cases of congenital word-deafness. I have encountered five such cases in three years, four boys and one girl, two being brothers.*

In this condition, the peculiar speech appears to be the result of a partially developed lip-reading word, memory being accompanied by a normal acuity of hearing; and the prognosis is not invariably good, but depends on the mental capacity of the afflicted to respond to any special educational advantages which may come his way.

CONCLUSIONS.

There is an important relationship between speech and intelligence—the age of acquisition of speech, the nature of speech, articulation, the persistence of lalling, the presence of echolalia, there being also a peculiarly high value in a vocabulary test in the estimation of intelligence.

There are two connotations of the term "idioglossia." This phenomenon, however, is of little significance in the symptomatology of mental defect. For one type has not been present amongst idiots and imbeciles at all, has been found in normal school-children on ten occasions, and its prognosis is invariably good; and the other type, being the more true idioglossia, occurs in the congenitally word-deaf.

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* A full account of these familial cases was given in the Jour. of Neurol. and Psychopath., 1930, xi., 28.

CLINICAL AND LABORATORY NOTES

NOTE ON THE REDUCING POWER OF β RADIATIONS.*

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(*From the Barnato-Joel Laboratories, the Middlesex Hospital.*)

The actions of X rays and of the penetrating radiations from radium have generally been considered as essentially oxidising in character. The following observations show, however, that under some circumstances reduction occurs as a sequel to β radiation.

The experiments were all conducted upon liquid systems by immersion of thin-walled glass tubes containing radon. Except where otherwise stated small test-tubes measuring about 4·0 cm. in length by about 0·5 cm. in diameter were used as the containers. The radon tubes were usually of the order of 10 millicuries in strength, were of glass, about 2·5 cm. long, 0·5 mm. in diameter, and with a wall thickness of the order of 0·1 mm., thus allowing a large proportion of the β radiation to reach the liquid in which they were immersed. The volume of fluid taken for experiment was about 0·7 c.cm., that quantity being found to fill the test-tube to a convenient height and to correspond more or less with the upper limit of the radon tube when immersed.

During the experiments the mouths of the test-tubes were lightly plugged with cotton-wool to exclude dust. Except where otherwise mentioned, all proceedings were carried out at the ordinary room temperature, and each observation was checked by a suitable control.

METHYLENE-BLUE.

In the earliest experiments (which indeed first suggested the possibility of reduction as a result of radiation) a solution of methylene-blue (0·1 per cent. in H_2O) was taken, and in it was immersed a zinc-copper couple. After a day or two the original dark blue colour was nearly discharged. The resulting pale blue liquid on exposure to the air again gradually reassumes the original dark blue colour as a result of oxidation, while further reduction gives rise to complete bleaching.

Such a "partially reduced" methylene-blue solution (0·7 c.cm.) was pipetted off into one of the small test-tubes; the radon tube (10 mc.) immersed, the test-tube lightly plugged with cotton-wool, and the whole left for 24 hours. When re-examined, the colour was found to be completely discharged showing further *reduction*.

To test the matter further, the original (0·1 per cent.) methylene-blue solution was diluted (1 part to 9 of H_2O) so as to give a bright sapphire blue when placed in the small test-tubes. On similarly exposing this solution to radon of a similar order of concentration to that used in the first experiment (about 10 mc.), marked loss of colour occurred in the first 24 hours, followed by complete bleaching within a further period of the same duration.

Similar results were obtained with solutions of brilliant green, acid fuchsin, and safranin; in all of which loss of colour is indicative of reduction.

ALKALI, COPPER, SILVER, AND PICRATE SOLUTIONS.

The probability of reduction processes arising as a sequal to β radiation being thus established, three of the reagents commonly employed for the detection of "reducing" sugars—Fehling's solution ammoniacal silver nitrate, and picric-acid-caustic soda mixture were similarly irradiated. After the lapse of 24 hours obvious reduction had occurred in the silver solution, and the picric-acid-soda mixture was distinctly reddened.

The Fehling's solution showed no apparent change, and indeed did not do so when the time of exposure was prolonged to three days. But at the end of that time the test-tube containing it and the radon (together with a control s placed in an incubator at 35° C. The next morning a nt reddish deposit was seen at the bottom of the tube. is probable that the precipitation (not the original luction) was the result of the heat. The control showed evidence of change.

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* The cost of this research was defrayed by a grant from the Medical Research Council.

In view of the fact that both ammoniacal silver nitrate d Fehling's solution are notoriously "tricky" in their actions, the experiments were repeated four or five times. variably reduction was found in the irradiated, while change was seen in the control specimens.

POTASSIUM PERMANGANATE.

The behaviour of solutions of potassium peranganate under similar conditions was next xamined. With centinormal $KMnO_4$ solutions radual decolorisation of the liquid with a muddy recipitate of MnO_2 resulted. With acid (H_2SO_4) olutions gradual decolorisation occurred, during hich the solution showed a tendency to assume a rown tinge. This was due to the presence of a very nely divided brown deposit, which gradually sank o the bottom of the tube, so that when decolorisaion was complete there was a small dark brown recipitate. This precipitate was formed when the oncentration of the acid was as high as five times ormal. On standing, it slowly diminished in uantity and in about a week had completely isappeared.

Experiments with manganous sulphate solutions showed hat exposure to β radiations was not attended by any recipitation of MnO_2.

On performing a further experiment with concentrations f N/100 $KMnO_4$ and 5N/1H_2SO_4, test-tubes of the same alibre (0·5 cm.) but greater length (7·0 cm.) were used, o as to accommodate 1·0 c.cm. of the acid permanganate solution. The radon tube was also increased in length to about 5·0 cm., while its radon content was of the order of 20 mc.

The same gradual loss of colour as before was noticed, but in addition four or five bubbles of gas were noticed adherent to the outside of the radon tube. The brown precipitate gradually formed and within a week after complete decolorisation had redissolved.

The gas bubbles suggested the presence of traces of hydrogen peroxide in the liquid, and indeed it has long been known that β radiations act upon water to produce traces of H_2O_2, and also that they decompose it when they act on it in dilute solutions.

To investigate the question of hydrogen peroxide formation, 1 c.cm. of distilled water was placed in each of six test-tubes (7·0 cm. × 0·5 cm.), and in each was placed a radon tube of the order of 20·0 mc. content.

After 24 hours, the first tube was tested for hydrogen peroxide by adding a drop of a saturated solution of titanic sulphate in concentrated H_2SO_4. On looking down the length of the tube and examining it against a white background a very faint yellow colour could just be detected, the control remaining colourless. On the five succeeding days one of the remaining tubes was examined, but the tint did not in any case seem deeper than that produced by 24 hours irradiation—i.e., the experiment suggested that equilibrium was soon reached when production and decomposition of H_2O_2 were balanced.

NITRATES.

As a final experiment upon the reducing power of β radiations it was decided to ascertain whether nitrates underwent any change to nitrites. As it seemed probable that a larger quantity of liquid than those used heretofore would be necessary the procedure was modified and an ordinary test-tube was used in which was placed the very thin glass tube (about 0·75 cm. in diameter and extending nearly the whole length of the containing test-tube) containing the radon.

The radon content was nearly 50 mc. The radon container was placed in the test-tube which was then filled with standard KNO_3 solution (1 c.cm. = 0·0001 g. N.) such as is used in water analysis. The radon tube was found to be buoyant in the liquid, so a slice of cork treated with paraffin wax was carefully slid over the mouth of the containing test-tube so as to keep it submerged, and the cork fixed in place by adhesive labels. After 24 hours irradiation the potassium nitrate solution was tested for nitrites by the Griess-Hosvay test (hydrocholic acid, naphthylamine hydrochloride and sulphanilic acid). A fine red colour developed, thus showing the presence of nitrites; the control test being negative.

Enough evidence has been given to show that at any rate when acting in confined systems of small content the β radiations give rise to definite reduction effects, and since the chemical changes produced by X rays and γ rays are usually considered as caused by the secondary β rays to which they give rise, it is possible that we may have here another step in the elucidation of the very complex question of the mode of action of radiations on living cells.

I have to acknowledge very gratefully the kindness of Prof. Tuck and Prof. Russ in affording me their valuable assistance, and also that of Mr. G. W. Spicer, B.Sc., in putting up the various samples of radon used throughout the experiments.

PREVENTION AND TREATMENT OF THE COMMON COLD BY "GLEGG'S MIXTURE."[*]

By E. P. Poulton, M.D. Oxf., F.R.C.P. Lond.,
PHYSICIAN TO GUY'S HOSPITAL.

I HAVE already described this treatment in a postgraduate lecture,[1] but as I have since modified the mode of application a second reference to the method is desirable, especially as no mention has been made of it in the recent discussion on the common cold at the Royal Society of Medicine,[2] and in subsequent correspondence in the *British Medical Journal*. The treatment consists in applying massive doses of an inert substance to the mucous membrane of the nose and nasopharynx. The mixture, which I have called "Glegg's mixture," consists of three parts of paraffinum liquidum, and one part of paraffinum molle (white vaseline), flavoured slightly with rosettol. By "Glegg's mixture with menthol" is meant the same paraffin and vaseline mixture containing gr. ½ of menthol per oz. of the mixture, without the rosettol. Both the mixtures are supplied under these names by the British Drug Houses in collapsible metal tubes for direct application. But undoubtedly the cheapest way is to order the material in bulk, and it will keep indefinitely in an airtight jar; 2 or 3 oz. at a time may then be transferred to a small stoppered bottle for daily use. The application is made by means of a "nasal pipette" (supplied by Down Bros., St. Thomas's-street, S.E.1), furnished with a strong rubber teat by which the mixture can be sucked up into the pipette. Between the applications the pipette is kept in a test-tube or small pot. It is important to see that the mixture is not sucked up into the teat, as this will cause the rubber to perish rapidly. These two methods are cleaner than using the nasal funnel described in my lecture. It is best for the patient to lie down on his back in order to apply the mixture, and a pipetteful should be driven down each nostril so that it is felt at the back of the nose; but it can also be applied standing up with the head thrown well back.

The method should be used if there is any fear that infection may have been incurred, or as soon as the slightest feeling of rawness at the back of the throat is felt. In slight cases the application should be made morning and evening; but at the beginning of a severe cold it should be applied four-hourly. If the treatment is delayed until the nose is blocked it may still be effective, especially if the mixture with menthol is used. In favourable cases the airway may be freed again after 24 hours or so, and the patient may be tempted to stop the treatment; this is a mistake, for the cold will return with its old severity in another one or two days; continuous treatment is necessary, although the number of applications can be quickly reduced after the first or second 24 hours.

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[*] Abstract of an opening address in a discussion at the Hunterian Society, 1931.

[1] Post-Grad. Med. Jour., 1930, v., 75.

[2] See THE LANCET, Feb. 13th, p. 316.

I was first informed of this mixture by Mr. Wilfrid Glegg, F.R.C.S., in 1921; he devised it primarily for rhinological cases. Ever since that time I have used it for the prevention and treatment of coryza, and have recommended it to numerous patients and medical friends, and I have only come across one person who noticed no benefit. I do not wish to claim too much for this treatment; but I do claim that if the cold cannot be aborted entirely, at least it develops into a relatively mild affair. I have only once lost the sense of smell since beginning the treatment, and I feel certain that it prevents to a very considerable extent the spread of infection downwards to the bronchi. Possible disadvantages are that it may produce looseness of the bowels—this is commonly regarded as an advantage at the beginning of an infection—it is better not to swallow the mixture if it can be avoided; also it is a bit messy, and a good supply of handkerchiefs is desirable.

Having described the method a word is desirable as to the reason for its therapeutic action. I believe it acts because the mucous membrane, where the infection is situated, becomes coated with the oily mixture, and so proves a less favourable environment for the infecting organism. But if this point of view is correct a massive dose must be used. This view of its action also explains why oily sprays are so ineffective; the volume of the material is not sufficient. Before 1921 I always used a spray and dichloramine-T in particular; the latter was irritating to the mucous membrane and not effective, or it made the cold worse. At this time I was getting colds on the average once every six or eight weeks, and they ran their full course with a slight temperature. On arresting the first cold by means of this treatment the vicious circle seemed to be broken, and I did not get another cold for six months! There are various proprietary preparations on the market which might be considered of similar nature. These are inferior because either they are too liquid, being presumably made of liquid paraffin, or if the substance is a medicated jelly only a minute amount is taken. It is important to get the substance of right consistence; it should be so thick that it only just runs. I cannot speak so definitely on the subject of prevention as I have not had the opportunity of testing this on a large scale; but it would be very valuable to try daily applications of this mixture on half the occupants of a school dormitory during a period of colds, and to compare the incidence of colds among the treated and the untreated.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

COMBINED SECTIONS OF EPIDEMIOLOGY AND STATE MEDICINE AND DISEASE IN CHILDREN.

ON April 19th these sections held a joint discussion on

Infection in the Dormitory.

Sir HENRY GAUVAIN (President of the Section of Disease in Children) occupied the chair.

Dr. J. ALISON GLOVER, introducing the subject, said that in a residential school or institution infection could occur through many channels and in various places. The infection could be conveyed, for example, through tableware, pencils, pens, roller towels, or books; but breath-to-breath infection was the most common, the organisms being wafted in droplets passing from one individual to another. This process might obtain in dormitory, common room, classroom, changing room, study, dining-room, tuck-shop, hall or chapel, the frequency being in the order named. Except in girls' schools, where cubicles were almost universal, and in one or two boys' schools, the dormitory easily came first. But it had a serious rival, for during an epidemic of influenza or measles it seemed that many of the dangerous secondary infections due to hæmolytic streptococcus or pneumococcus were spread in the sick rooms and sanatorium wards. "Infection in the dormitory" might include that which occurred in washing places by the accidental interchange of towels. It was natural to regard bed-to-bed infection as important, since in bed the carrier and recipient remained in close proximity for nine to ten hours, and ventilation was lessened by the lack of movement of persons, by the closure of doors, and when stormy conditions prevailed, closure of windows too. Many children slept with open mouths, and so lost the protection of the nasal filter.

The most suitable diseases for the purposes of this study were those attributed to the hæmolytic streptococcus—i.e., tonsillitis, scarlet fever, and otitis media. In schools which had both day scholars and bo
the incidence of many infectious diseases was
found to be significantly less on the day scholars.
The variation of the incidence of a disease on different
dormitories was often significant. Where the ba
logical results of sample throat swabbings of
boys sleeping in a dormitory were charted,
groupings of carriers of the same organism or of th
same strain of the organism often pointed clea
to bed infection. When an epidemic of infe
disease broke out in a school, the first cases were
to the sanatorium or sick rooms. If the epidemi
was of considerable proportions, the sanato
accommodation was insufficient, and ordinary dorm
tories had to be adapted as sick rooms or war
Two dangers arose here: one was that the scho
authorities would not understand the perils of suc
adapted wards in epidemics of influenza or
which were generally accompanied by secon
infections if patients were crowded together;
should be spaced far more generously than 3 fe
between beds. Boys who showed any clinical si
of secondary infection with hæmolytic streptoco
should be at once removed from the ordinary measl
ward and nursed in special wards, or, preferably, i
separate rooms. Otitis media had been observed t
travel all down one side of a ward of a sch
sanatorium filled with measles convalescents. Oft
the Board of Education minima[1] were not attaine
The Board had not dealt with two important matters

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[1] Secondary School Buildings, Board of Education. F
cational Pamphlets. No. 86. 1931. Pp. 54, 56.

the avoidance of “dead space” in dormitories; the question of heating dormitories. The defect “dead space” was chiefly found in buildings not ginally intended as schools which had been adapted this purpose. Dr. Glover himself inclined to the heated dormitory, though the separate washing om should be moderately heated. Many of the ildren now came from centrally heated homes.

Surgeon-Captain S. F. DUDLEY's remarks were ade on the assumption that when people slept in ngested dormitories a large proportion of the fectious morbidity was contracted in bed. A mparison made of the attack-rates in two naval aining establishments, in one of which the sleeping nditions were denser than in the other, showed at while there was little difference in the attack-tes for the most infectious types of disease, the revalence of more serious infections and complicaons was higher in the establishment with the denser ight environment. This raised the question whether n improvement in sleeping quarters, too small to heck total morbidity, might not limit the clinical everity and the number of complications. The ontrast in the amount of sickness between trained en and recruits suggested the question whether y any practical methods the high morbidity among ecruits could be reduced without decreasing the high erd immunity of the trained men. Certain observaions seemed to suggest that institutional morbidity night be decreased by giving newcomers relatively nore space than older residents, or by grouping beds n dormitories, instead of having them all equidistant. When the spacing between beds was negligible it was mportant to aim at the greatest possible distance between one respiratory apparatus and the next. The principle of the grouping of beds was well worth experimenting upon, though such grouping would be unjustifiable in hospital wards. Captain Dudley suggested that parasites might be able to acquire new pathological attributes in closely packed dormitories. Observations on cases of close segregation at night favoured this possibility. One of the reasons why a dormitory had a bad name in the matter of infection was the custom of crowding closely round the fire or stove; proximity of beds was not always responsible. He advanced the view, which he held strongly, that much of the spread of disease was attributable to insanitary methods of washing up, which he called “dish-water infection,” and this applied also to the ordinary restaurant in civil life. The customary methods of washing all kinds of utensils were not satisfactory; even the rinsing of many glasses in the same water was culpable. This might well be an important means of spread of influenza, for some of the infective material must cling to the glass or cup after such careless methods of washing as were commonly practised.

Dr. R. E. SMITH (Rugby) said that the impression, widely held, that infection in schools was largely spread in dormitories required critical examination. Infection by droplet or by contact could very well occur in the study, in the school-house, in the chapel or classroom and in ordinary intercourse, and by carriers from outside the school. At Rugby there was an allowance of 66 square feet and a cubic capacity of 794 cubic feet per boy. In the studies the allowance was 31½ square feet. Space was not all that was required. Cross-ventilation in the dormitories was desirable, and the space available must be used to good advantage. Most epidemics at schools occurred in the Lent term, and their treatment formed a large part of the medical officer's duties. Measles conferred a lasting immunity, and the attack-rate was so high that he considered that the sooner the boy got it over the better for him. Influenza, however, conferred no immunity. He gave examples of infection by carriers, one being traced to a nurse who was brought in to nurse boys with scarlet fever and mumps. A carrier was dangerous for several days before infection, as well as during a number of days after it.

Dr. W. H. BRADLEY (Downside) spoke of the difficulty of investigating high velocity epidemics such as influenza and measles; in these diseases it was almost impossible to detect bed-to-bed spread, but variations in tempo and intensity in different dormitories suggested a dormitory factor. It was impossible to guess the ætiology of acute nasopharyngitis at the beginning of an attack. Most of his boys were admitted with a high pulse-rate and a subnormal temperature; about five hours later the temperature rose. For a long time both he and the nurses in the sick dormitories wore masks, and he was sure none of the nurses was instrumental in the spread. In many cases it was clear that relapse of so-called influenza coincided with a new infection by a distinct organism, a change in flora from non-coccal to hæmolytic streptococci having been demonstrated in the majority of relapses. He satisfied himself that at one time there were two distinct waves of infection operative in the school, and it was never safe to assume that the bacteriology was the same for the whole school. This assumption of uniformity was safe, however, if in any dormitory there was something clinically distinctive about all the cases. He agreed with those who attributed the main infection in schools to the dormitories, whether the infection were of high or low velocity; proper spacing of beds was of the utmost importance. He also spoke on the moral aspect of the question, and urged that the ideal to aim at was separate well-ventilated bedrooms.

Dr. DOROTHY TAYLOR (Bedales) said it was noticeable in big epidemics that all the complications came at the peak of the epidemic, and that was specially noticeable in otitis media and pneumonia. This she attributed to the increased virulence of the causal bacteria; the sanatorium was more likely to be crowded at the peak of the epidemic than at other times.

Dr. L. R. LEMPRIERE (Haileybury) said he did not wear a mask, and he had not had influenza for 30 years. The public school vaccine was projected with the idea of combating not influenza but its complications, and his own figures showed the incidence of the latter was reduced by its use. He described the dormitory arrangements in his school, and gave details of some outbreaks of infection. He had many times tried to trace infection by collecting the names of all possible contacts, not only in house and form, but by proximity in the gymnasium, chapel, and hall; but after the third, or even the second, batches the task became impossible. It had also been impossible for him to assign the chief cause of spread to the dormitory. He believed infection took place and spread far more readily in the house rooms than in the dormitories, for in the former there was the closest contact between the boys.

Dr. A. L. SUTCLIFFE (Malvern Girls' School) thought that as something like 100 per cent. of the population of public schools had measles, and they would have that disease sooner or later, it was a mistake to take the elaborate precautions against it which were now usual. He had never had serious complications following measles in any preparatory school with which he was concerned.

Surgeon-Captain P. M. MAY (Royal Hospital School, Greenwich) said that many of the scholars he had were already immune from measles, having had the disease at home. Seldom had he seen one boy take an infection of any kind from another. His beds were some distance apart, and the ventilation was quite good. He echoed Dr. Sutcliffe's question whether it was right to devote so much energy to prevention in preparatory schools.

Dr. ALICE SANDERSON CLOW (Cheltenham) said there were in Cheltenham 33 separate school establishments, and her conclusion was that the classrooms or day living rooms were the chief places for the spread of infection. She was able to establish a remarkable association between high ceilinged dormitories and very low incidence of infection, even though in such apartments the beds might be fairly close together. All her observation drove her to the conclusion that the chief danger was in stuffy classrooms.

Dr. F. W. GOODALL suggested that the difference in the incidence-rate of infection between boys and girls might be one purely of sex. In one public school epidemic he had found that though the small studies were only meant for one or two boys, it was not uncommon for a sort of committee meeting to be held in them, lasting most of the evening, when ten or a dozen boys sat with heads practically touching. There had been no supervision to guard against this custom, which alone would account for a rapid spread of infection.

Dr. E. P. POULTON spoke of the great efficacy in preventing the spread of infection of a massive application of an inert substance to the nasal and pharyngeal mucous membrane.[1]

The CHAIRMAN emphasised the great importance of abundance of fresh air everywhere; the more air the greater the dilution of the infecting medium and the less chance of infection. As a rule he did not think schools were properly planned; school, hospital, and sanatorium authorities had been too much at the mercy of the architect. He proceeded to describe the arrangement now being carried out at Alton, whereby the roof could be slid back and any desired side of the ward exposed to the fresh air and sun, while it was shielded from wind and rain in another quarter. The heating should be by the old Roman panel system, heating the floors, whence hot air rose and carried with it any infective material.

SECTION OF ODONTOLOGY.

AT a meeting of this section (to which members of the Section of Laryngology were specially invited), held on April 24th, Mr. E. B. DOWSETT, the President, being in the chair, Mr. WARWICK JAMES presented a joint paper compiled by himself and Mr. SOMERVILLE HASTINGS entitled

Mouth-breathing and Nasal Obstruction.

He said that for many years they had jointly examined patients suffering from conditions generally believed to be associated with mouth-breathing and nasal obstruction. The nose was the portal of entry for air in mammals, birds, and reptiles, and was the normal route in man. The powerful urge to breathe through the nose was present in everybody. They had examined 53 sleeping infants under a fortnight old, and all of them had breathed entirely through the nose, even if the lips were separated or the th was in the mouth. If the nose was pinched babies began to struggle and cry after abou seconds, and did not open their mouths until began to cry. In a case of congenital obstructi the post-nasal orifices recorded by C. W. Richar it had taken the child over two weeks to lea breathe through the mouth. It was surprising few children with perpetually open mouths used the oral route for respiration. Of 54 children tested, ten breathed by mouth in the time; seven used both nose and mouth; and used the mouth only. Oronasal breathing uncommon, and oral breathing was rare. there was no mechanical obstruction to m breathing, the urge to nasal respiration mu physiological. A full, deep inspiration could be much more easily through the mouth than th the nose, yet man and all animals used the Possibly continuous exercise of the sense of was of value to the organism, but more pro mouth-breathing animals had failed to s because of the protection afforded by the nose a throat and lung infections. In Sir Arthur opinion considerable changes had taken place nose and face since Roman times, mainly th diminished use of the masticatory muscles.

THE IDEAL MOUTH AND THE IMPORTANCE OF NE PRESSURE.

To understand what was pathological, i necessary to comprehend the normal mouth. tion implied a changing normal, but at any one it should be possible to conceive an ideal m most favourable to the *individual*. The i mouth was remarkably unformed compared that of the adult. The potentialities of existed, but the moulding of the parts was dependent on mechanical factors due to the of the muscles of the tongue, of mastication, expression. The eruption of the temporary provided a further mechanical stress. In the the ideal conditions were fulfilled when the were arranged in perfect alignment in r arches with the crowns free from the gum, was firmly attached to the bone, the thin being well protected by the overhanging b the enamel. The alveolar arch should be a mately as large as that of the dental crown vertical implantation of the roots. The oral should be free from air; the tongue should the area inside the dental and alveolar arch the lips and cheeks should be in close conta the outer side of the arches.

The most important factor in the develop the normal growing mouth and the preven local disease was the negative pressure produ the act of sucking or swallowing. From one litres of saliva were produced daily and de repeated acts of swallowing, which produced tive pressure of about 10 cm. of water. The tion also helped to keep the mouth healt removed food; in fact, a properly lubricated would hardly allow actual contact between f teeth and gums except on the crushing s If the anterior oral sphincter (the lips) fail loss of irrigation greatly favoured path changes in the front teeth thus exposed to If a negative pressure—however slight—was well-formed arches were found.

FAILURE OF THE ORAL SPHINCTERS.

If one of the sphincters failed, there was a expression in the face at rest; the nose was all, with a wide bridge; the alæ and cheek-bones re less prominent than usual; the nasal orifice s small and rounded or slit-like; the upper lip s short and everted, and the lower lip pendulous d thickened; both lips were often dry and cracked, d the chin small, receding, and "double." Often e mandible appeared to be displaced backwards; angle was not distinct, and its ramus appeared to relatively short. The nose was narrow internally, en with a deviated septum, and the turbinal icosa thickened. Failure of the anterior oral hincter was common but did not indicate mouth-eathing.

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[1] The technique recommended was that described by Dr. Poulton on p. 933 of this issue.

Nasal obstruction was rarely caused by adenoids; ost of the children who benefited by removal of enoids had far too small a mass to cause any struction. In very few of the open-mouthed ildren was the airway through the nose less than at through the open glottis. The "adenoid facies" ight be present without any adenoids.

Negative pressure might be absent owing to the ilure of the anterior sphincter, the posterior hincter (the soft palate and tongue), or both. If e first, the loss of pressure was within the lips ly; the arches were rounded, the bite was too ose, and the mandibular incisors impinged on the alate. The upper incisors might project or even ope inwards. If, in addition, the tongue was not contact with the palate except at the back, the ont of the mouth was markedly deformed. If the osterior sphincter failed the deformity was less arked, but if both failed there was much deformity. he surfaces of the teeth were not irrigated and leaned by friction and always showed a deposit of ebris and tartar. When the mucosa and gums were ot compressed they became swollen and œdematous, nd a "tension ridge" appeared at the junction of ompressed and uncompressed areas.

CAUSES OF OPEN MOUTHS AND MOUTH-BREATHING.

The commonest cause of failure of the oral phincter seemed to be muscular weakness, often due o illness. Oral breathing might be demanded by espiratory distress, as in pneumonia, and a habit night start thus. There was often a familial failure of the anterior sphincter; imitation was an important actor. Lowndes Yates suggested as a probable ause a faulty position of the neck, the head being pressed forward. A superabundance of clothing, warm moist atmospheres, and the prone position all caused swelling of the nasal mucous membrane. At the junction of the naso- and oro-pharynx air drawn through the nose impinged on the pharyngeal wall. Adenoids might therefore easily become infected by germ-laden air, and attacks of nasal catarrh, with intermittent swelling of the nasal mucous membrane, might thus lead to oronasal breathing; further, hypertrophy of the adenoids might then produce oral breathing.

In congenital choanal atresia there might be few changes except in the palate, and those changes apparently resulted from absence of moulding by the tongue in consequence of the open mouth. Deformities of the nose and face seemed to be more the cause than the result of nasal obstruction.

DISCUSSION.

The PRESIDENT said the paper seemed to have inverted the usual arrangement of cause and effect. He asked whether developmental narrowing of the palate obstructed breathing.

Mr. T. B. LAYTON said it was important to keep separate the adenoid facies, the high, arched palate, and deformed dental arches. The typical adenoid facies was a myth for which no evidence had ever been brought forward. He thought the openers were rather trying to make the pendulum swing too far. Their paper showed what a dreadful word "adenoids" was. Very few people had a clear idea what they meant by it, and the ideas differed among different users. The operation on adenoids should seldom be done, and would in time pass into the limbo of forgotten industries. He would not accept the idea of an ideal normal. The number of factors in the upper respiratory tract was so great that it was impossible to collect statistical evidence. Very often the significant fact or case was far more important than a large number of insignificant ones. Mr. Layton showed illustrations of almost perfect palates associated with persistent mouth-breathing, and of high arched palate without contracted dental arch or "adenoid facies." Some condition involving the whole body, and not only the mouth and throat, underlay the facies: a condition called in recent work the "myasthenic state," the cause of which, in turn, lay not in one vitamin deficiency or one endocrine disturbance but in the whole hygiene of the patient's life.

Mr. A. R. FRIEL advocated giving children something to do with their mouths rather than just telling them to keep their mouths shut, and illustrated a little wheel for them to hold between the lips. To reduce the nasal congestion he used rubber bougies in the nose, causing the turbinate to shrink away and stimulating the nasal reflex.

Mr. A. LOWNDES YATES said that the paper commanded general agreement. He had found that whether a child breathed through its nose or its mouth depended on the position in which it lay. Children who lay on their backs sometimes had true asphyxial fits, like epileptic fits. If the head was thrust forwards there was a pull on the sphincters, which therefore worked less well. Scoliosis might involve anterior deformities of the head and something very like an adenoid facies. Adenoids caused congestion of the nasopharynx, which deflected the septum, and was followed by an increase in the size of the bony structure. Structures developing in an infected area could not develop normally. The reflex for nose-breathing was believed to be the passage of air through the middle meatus, and would act in the presence of considerable obstruction. Training a child in correct posture was generally of more importance than removal of the adenoids.

Dr. OCTAVIA LEWIN agreed that the conception of adenoid facies was without foundation, and cited a patient who had had "adenoids out five times," and still had the adenoid facies.

Mr. E. D. DAVIS stressed the value of coöperation between laryngologist and odontologist. The mouth-breather was not of such good physique as the nose-breather, and was a danger to himself and to others. The public should be educated to the fact that the odontologist's aim included utility and general physique as well as beauty.

Mr. C. SCHELLING suggested "labial valve" and "palatal valve" as better terms than "sphincter."

Mr. J. G. TURNER asked how negative pressure acted. He and Dr. Lack had long ago decided that the open mouth was no criterion of mouth-breathing. The fact in post-normal occlusion was that there was inferior retrusion of the mandible because there was not room for it between the upper canines; the maxilla was small. The retrusion might be associated following measles in any preparatory school with which he was concerned.

Surgeon-Captain P. M. MAY (Royal Hospital School, Greenwich) said that many of the scholars he had were already immune from measles, having had the disease at home. Seldom had he seen one boy take an infection of any kind from another. His beds were some distance apart, and the ventilation was quite good. He echoed Dr. Sutcliffe's question whether it was right to devote so much energy to prevention in preparatory schools.

Dr. ALICE SANDERSON CLOW (Cheltenham) said there were in Cheltenham 33 separate school establishments, and her conclusion was that the classrooms or day living rooms were the chief places for the spread of infection. She was able to establish a remarkable association between high ceilinged dormitories and very low incidence of infection, even though in such apartments the beds might be fairly close together. All her observation drove her to the conclusion that the chief danger was in stuffy classrooms.

Dr. F. W. GOODALL suggested that the difference in the incidence-rate of infection between boys and girls might be one purely of sex. In one public school epidemic he had found that though the small studies were only meant for one or two boys, it was not uncommon for a sort of committee meeting to be held in them, lasting most of the evening, when ten or a dozen boys sat with heads practically touching. There had been no supervision to guard against this custom, which alone would account for a rapid spread of infection.

Dr. E. P. POULTON spoke of the great efficacy in preventing the spread of infection of a massive application of an inert substance to the nasal and pharyngeal mucous membrane.[1]

The CHAIRMAN emphasised the great importance of abundance of fresh air everywhere; the more air the greater the dilution of the infecting medium and the less chance of infection. As a rule he did not think schools were properly planned; school, hospital, and sanatorium authorities had been too much at the mercy of the architect. He proceeded to describe the arrangement now being carried out at Alton, whereby the roof could be slid back and any desired side of the ward exposed to the fresh air and sun, while it was shielded from wind and rain in another quarter. The heating should be by the old Roman panel system, heating the floors, whence hot air rose and carried with it any infective material.

SECTION OF ODONTOLOGY.

AT a meeting of this section (to which members of the Section of Laryngology were specially invited), held on April 24th, Mr. E. B. DOWSETT, the President, being in the chair, Mr. WARWICK JAMES presented a joint paper compiled by himself and Mr. SOMERVILLE HASTINGS entitled

Mouth-breathing and Nasal Obstruction.

He said that for many years they had jointly examined patients suffering from conditions generally believed to be associated with mouth-breathing and nasal obstruction. The nose was the portal of entry for air in mammals, birds, and reptiles, and was the normal route in man. The powerful urge to breathe through the nose was present in everybody. They had examined 53 sleeping infants under a fortnight old, and all of them had breathed entirely through the nose, even if the lips were separated or the thumb was in the mouth. If the nose was pinched the babies began to struggle and cry after about 30 seconds, and did not open their mouths until they began to cry. In a case of congenital obstruction of the post-nasal orifices recorded by C. W. Richardson it had taken the child over two weeks to learn to breathe through the mouth. It was surprising how few children with perpetually open mouths really used the oral route for respiration. Of 54 such children tested, ten breathed by mouth in the day-time; seven used both nose and mouth; and three used the mouth only. Oronasal breathing was uncommon, and oral breathing was rare. Since there was no mechanical obstruction to mouth-breathing, the urge to nasal respiration must be physiological. A full, deep inspiration could be drawn much more easily through the mouth than through the nose, yet man and all animals used the nose. Possibly continuous exercise of the sense of smell was of value to the organism, but more probably mouth-breathing animals had failed to survive because of the protection afforded by the nose against throat and lung infections. In Sir Arthur Keith's opinion considerable changes had taken place in the nose and face since Roman times, mainly through diminished use of the masticatory muscles.

THE IDEAL MOUTH AND THE IMPORTANCE OF NEGATIVE PRESSURE.

To understand what was pathological, it was necessary to comprehend the normal mouth. Evolution implied a changing normal, but at any one period it should be possible to conceive an *ideal normal* most favourable to the individual. The infant's mouth was remarkably unformed compared with that of the adult. The potentialities of growth existed, but the moulding of the parts was largely dependent on mechanical factors due to the action of the muscles of the tongue, of mastication, and of expression. The eruption of the temporary teeth provided a further mechanical stress. In the adult the ideal conditions were fulfilled when the teeth were *arranged in perfect alignment* in rounded arches with the crowns free from the gum, which was firmly attached to the bone, the *thin margin* being well protected by the overhanging bulge of the enamel. The alveolar arch should be approximately as large as that of the dental crowns, with vertical implantation of the roots. The oral cavity should be free from air; the tongue should occupy the area inside the dental and alveolar arch, while the lips and cheeks should be in close contact with the outer side of the arches.

The most important factor in the development o the normal growing mouth and the prevention o local disease was the negative pressure produced b the act of sucking or swallowing. From one to tw litres of saliva were produced daily and demande repeated acts of swallowing, which produced a negative pressure of *about 10 cm. of water.* The irrigation also helped to keep the mouth healthy. I removed food; in fact, a properly lubricated mout would hardly allow actual contact between food an teeth and gums except on the crushing surface If the anterior oral sphincter (the lips) failed, th loss of irrigation greatly favoured pathologic changes in the front teeth thus exposed to the ai If a negative pressure—however slight—was presen well-formed arches were found.

FAILURE OF THE ORAL SPHINCTERS.

If one of the sphincters failed, there was a lack o expression in the face at rest; the nose was usual cognised. It had been found that the earlier zema passes into the flexural prurigo, and that thma begins to be noted at about four or five years age. Ichthyosis to a greater or lesser degree was ways present. The skin condition tended to clear puberty, but the asthma remained. Most of the patients were sensitive to something—usually to ood proteins—and it was interesting to note that the rst signs appear about the time that foods other man milk are added to the diet. Wheat was commonly a factor. Two cases under his care were the ollowing:—

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[1] The technique recommended was that described by Dr. Poulton on p. 933 of this issue.

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Dr. FREEMAN in replying said that it was almost impossible to cure asthma in elderly people, or in cases which arose from infection in the lungs. The only cases in which it was possible to obtain really good results were young people, and cases in which the offending protein could be eliminated. He had found auto-hæmotherapy of use in cases of pruritus, but not in asthma.

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THERE are many good texts in this pregnant little book. And perhaps the best is Ryle's definition of a diathesis as "a transmissible variation in the structure or function of tissues rendering them peculiarly liable to react in a certain way to certain extrinsic stimuli." For it keeps clearly before our minds the essential consideration that a disease is a process in which the body is taking an active part and not merely a something by which it is possessed and injured. The extrinsic factors of disease—microbic, dietetic, œcological—have been hunted out these 50 years with such success that the inherent qualities of the organisms on which they impinge have been a good deal neglected, and we are grateful to Sir Archibald Garrod for reminding us, with all his graceful erudition, of many things which we ought to remember about the human constitution. And as we should expect from such a fruitful investigator, he is continually speaking as much of what is to be discovered as of what we know already. If, for example, we have such obvious congenital defects as alkaptonuria or hæmatoporphyrinuria, or such errors as cystinuria, which attracts attention by what is really the accident of a stone in the bladder, may there not well be other metabolic abnormalities, rare perhaps and not of vital import, which wait discovery? How much too there must be still to find out about the varying reactions of bodies which we can reasonably call normal to infections and the other changes and chances of social life.

Extrinsic hygiene is far from exhausted. But the rates of return are beginning to fall off, and no one with a liking for prophecy can doubt that personal constitution must inevitably come to play a larger and larger part in public health as well as in individual medicine. We know, for instance, that heritable qualities may be important factors in deciding whether a mouse develops a malignant tumour or how long a guinea-pig will survive inoculated tuberculosis. Sir Archibald Garrod's urbane philosophy forms an excellent background for the rigorous and difficult inquiries which are needed before we know how far the like applies to human populations. These are being pursued in various ways; to those to whom the dull and laborious task of accumulating human genetical data does not appeal, we commend Draper's method of exploring the association between particular diseases and the different types of bodily configuration.

Text-book of Ophthalmology.

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Mr. H. Kenshole asked whether or not dental irregularities were caused by breathing through the mouth, as had been taught.

REPLY.

Mr. Somerville Hastings said the action of the oral sphincters involved muscular work; they were not mere valves. He had known the whole shape of the jaw completely change after a couple of years with a closed mouth and proper negative pressure. He agreed that adenoids were often not present in the cases of open mouth (not necessarily used for breathing) associated with a peculiar shape of skull known as "adenoid facies." Adenoids might cause obstruction mechanically, but a far smaller mass of infected adenoid tissue, acting as a septic focus, might cause intermittent nasal obstruction by mucosal swelling.

Mr. Warwick said that he thought the arch was narrow because the tongue went back, and not vice versa. Suggestion was a very important factor in the use of the lip exerciser. Merely holding between the lips was insufficient; the child must be taught to put its tongue against its palate, swallow, and fix its mandible in the right position. Treatment should be started on the temporary dentition. The negative pressure was important in fixing the position of the mandible.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

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A meeting of this section was held on April 15th, with Dr. H. F. Moore, the President, in the chair. Two cases of

Myasthenia Gravis

were shown by Dr. R. H. Micks. Both patients were women 26 years old, and the duration of the disease was 12 and 18 months respectively. The muscles first attacked in each case were those supplied from the medulla—the muscles of the face, the pharynx, and the sternomastoids being most affected. The arms, and to a lesser degree the legs, also showed weakness. In both cases the myopathy had already led to an unmistakable generalised muscular weakness which could be detected even when the patients were at their best and strongest, and there was also present the better-known and more dramatic characteristic of variability of the weakness. In one case the disease had apparently been stationary for the last six months. In the other there had been a few months ago an acute attack of dysphagia, dyspnœa, and cardiac weakness from which the patient had nearly died; she had now regained her status quo. Dr Micks demonstrated the chief clinical features of these cases and referred to the importance of recognising the presence of the gradual unvarying increase of muscular weakness.

The President spoke of the theory that in myasthenia gravis there is a disability of the carbohydrate metabolism of the muscles.—Dr. W. C MacFetridge said that these cases were of great importance to ophthalmic surgeons because the extrinsic muscles of the eye were particularly involved

Splenomegaly.

Dr. J. O'Connor showed a case of splenomegaly

The patient was a girl, aged 19, who was admitted to hospital in February complaining of swelling in the left side of the abdomen. She had first noticed it about two years before, but during the past year it had got much larger. At first it disappeared for a time, but then it came back, and she then experienced pain of a crampy nature, not very severe, in the left side. She had had amenorrhœa for the last two years. The kidneys were normal, and the cardiac and respiratory systems were both normal. A blood examination showed 6800 white cells per c.mm.; it was impossible to count the red cells owing to an extreme degree of auto-agglutination of the cells. A fragility test was normal. The hæmoglobin was 75 per cent. A Wassermann test done on two occasions was fully positive.

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Prurigo-Asthma-Ichthyosis Complex.

Dr. E. T. Freeman, in reporting two cases, sa that in 1892, Besnier described a type of pruri which begins about the sixth month as an eczem affecting the cheeks and spreading down to the midd of the neck and to the limbs, where it eventually found most constantly at the flexures. The sk was thickened, covered with papules and lichenifi in these children, and was moist and oozing in f In recent years the combination of this type prurigo with asthma and ichthyosis had be cognised. It had been found that the earlier zema passes into the flexural prurigo, and that thma begins to be noted at about four or five years age. Ichthyosis to a greater or lesser degree was ways present. The skin condition tended to clear puberty, but the asthma remained. Most of the atients were sensitive to something—usually to iod proteins—and it was interesting to note that the rst signs appear about the time that foods other ian milk are added to the diet. Wheat was com- ionly a factor. Two cases under his care were the ollowing :—

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Dr. O'CONNOR said that he did not know whethe the condition was one of true agglutination or pseudo agglutination. Statistics showed that in almos every case of Banti's disease in which there wa evidence of sclerosis, splenectomy was followed by fatal result.

Prurigo-Asthma-Ichthyosis Complex.

Dr. E. T. FREEMAN, in reporting two cases, sai that in 1892, Besnier described a type of prurig which begins about the sixth month as an eczema affecting the cheeks and spreading down to the midd of the neck and to the limbs, where it eventually found most constantly at the flexures. The ski was thickened, covered with papules and lichenif in these children, and was moist and oozing in fa In recent years the combination of this type prurigo with asthma and ichthyosis had recognised. It had been found that the earlier eczema passes into the flexural prurigo, and that asthma begins to be noted at about four or five years of age. Ichthyosis to a greater or lesser degree was always present. The skin condition tended to clear at puberty, but the asthma remained. Most of the patients were sensitive to something—usually to food proteins—and it was interesting to note that the first signs appear about the time that foods other than milk are added to the diet. Wheat was commonly a factor. Two cases under his care were the following :—

A girl, aged 14, had almost every conceivable treatment. She was put on a wheat- and egg-free diet, and was free from asthma for four weeks. On adding wheat and eggs the asthmatic attacks returned. She is now again free on the restricted diet.

A boy, also aged 14, showed ichthyosis, patches of prurigo of the Besnier type, and a typical asthmatic chest with great antero-posterior widening and indrawing of the lower ribs. He lived on a farm and was sensitive to cattle hair. In hospital he was free from attacks. He was also kept on a wheat-free diet.

These cases, said Dr. Freeman, were usually stated to have achlorhydria. One of these reported had, and the other had not. The basal metabolic rates were low.

Dr. CYRIL MURPHY mentioned a case of asthma in which the patient was sensitive to dog's hair. Her dog was given away and she remained free from asthma. Recently however she had come in contact with dogs, and the asthma had returned. He was now treating her with injections of dog's hair antigen and the result was very satisfactory. He thought that wherever the offending protein could be avoided, it was possible to bring about a cure of the disease.—Dr. W. G. HARVEY referred to the use of auto-hæmotherapy in these cases, and said that he had found proteose injections useful in many conditions, but not in asthma.—Dr. ABRAHAMSON laid stress on the importance of a careful history. Without it the skin tests were often confusing and misleading.

Dr. FREEMAN in replying said that it was almost impossible to cure asthma in elderly people, or in cases which arose from infection in the lungs. The only cases in which it was possible to obtain really good results were young people, and cases in which the offending protein could be eliminated. He had found auto-hæmotherapy of use in cases of pruritus, but not in asthma.

Dr. O'CONNOR read a note on Some Cases of Artificial Pneumothorax, and Dr. ABRAHAMSON demonstrated lantern slides illustrating the gradual stretching of adhesions by pneumothorax.

REVIEWS AND NOTICES OF BOOKS

The Inborn Factors in Disease.

By Sir ARCHIBALD E. GARROD. Oxford: Clarendon Press. 1931. Pp. 160. 7*s.* 6*d.*

THERE are many good texts in this pregnant little book. And perhaps the best is Ryle's definition of a diathesis as "a transmissible variation in the structure or function of tissues rendering them peculiarly liable to react in a certain way to certain extrinsic stimuli." For it keeps clearly before our minds the essential consideration that a disease is a process in which the body is taking an active part and not merely a something by which it is possessed and injured. The extrinsic factors of disease—microbic, dietetic, œcological—have been hunted out these 50 years with such success that the inherent qualities of the organisms on which they impinge have been a good deal neglected, and we are grateful to Sir Archibald Garrod for reminding us, with all his graceful erudition, of many things which we ought to remember about the human constitution. And as we should expect from such a fruitful investigator, he is continually speaking as much of what is to be discovered as of what we know already. If, for example, we have such obvious congenital defects as alkaptonuria or hæmatoporphyrinuria, or such errors as cystinuria, which attracts attention by what is really the accident of a stone in the bladder, may there not well be other metabolic abnormalities, rare perhaps and not of vital import, which wait discovery? How much too there must be still to find out about the varying reactions of bodies which we can reasonably call normal to infections and the other changes and chances of social life.

Extrinsic hygiene is far from exhausted. But the rates of return are beginning to fall off, and no one with a liking for prophecy can doubt that personal constitution must inevitably come to play a larger and larger part in public health as well as in individual medicine. We know, for instance, that heritable qualities may be important factors in deciding whether a mouse develops a malignant tumour or how long a guinea-pig will survive inoculated tuberculosis. Sir Archibald Garrod's urbane philosophy forms an excellent background for the rigorous and difficult inquiries which are needed before we know how far the like applies to human populations. These are being pursued in various ways; to those to whom the dull and laborious task of accumulating human genetical data does not appeal, we commend Draper's method of exploring the association between particular diseases and the different types of bodily configuration.

Text-book of Ophthalmology.

Vol. I.: *The Development, Form, and Function of the Visual Apparatus.* By W. STEWART DUKE-ELDER, M.D., Ch.B., F.R.C.S. Eng., Surgeon, Royal London Ophthalmic (Moorfields) Hospital; Ophthalmic Surgeon to St. George's Hospital. London: Henry Kimpton. 1932. Pp. 1124. £3 3*s.*

MR. Duke-Elder has planned a text-book of ophthalmology on a monumental scale. The first volume deals solely with the anatomical, physiological, optical, and psychological foundations of the subject. A short opening section traces the genesis of the rudimentary eye beginning with the phototropism of the primitive organism. This is followed by a section on the anatomy of the human eye, its adnexa, and the central nervous mechanism of vision, in which are explained, not only the visual paths, the sensory, the sympathetic, and the oculomotor systems, but also the primitive connexion with the labyrinthine nerves and the postural centres in the mid-brain. A chapter on embryology comes next, and then others on the ocular pigment and on heredity. With the section on the physiology and biochemistry of the eyes the author comes to that part of his subject to which he has himself made original contributions, and the chapters on the vascular circulation and its control, on the metabolism of the eye, and on intra-ocular pressure may be considered the most authoritative part of the work. Chapters follow on the physiology of the pupil and of the extra-ocular

muscles. We do not find the author's account of the anatomy and the physiology of the ciliary muscle altogether satisfactory. The term "scleral spur" occurs several times but to understand what it is, its connexion with the longitudinal fibres of the ciliary muscle on the one hand and with Schlemm's canal on the other, we have to turn to the original description by Prof. Arthur Thomson, of Oxford (*Ophthalmoscope*, 1911, ix., 470). It is a pity that the figures accompanying this original article were not reproduced, for nowhere else have we met such a clear explanation of the action of the longitudinal fibres of the ciliary muscle in opening up Schlemm's canal.

The action of the ciliary muscle in accommodation presents difficulties and is not fully explained by Mr. Duke-Elder. While agreeing that Helmholtz's theory in its original form needs modification, he fails to show how the different portions of the ciliary muscle coöperate with each other in causing relaxation of the zonule. Mr. Thomson Henderson, of Nottingham, believes that the only fibres which are directly concerned in positive accommodation are the circular fibres, the longitudinal fibres, which he calls "sustentaculum zonulæ," and the radiating fibres, which he calls "tensor zonulæ," being concerned in maintaining the zonular curve while accommodation is relaxed. According to this view these two latter sets of fibres are antagonistic to the first and their positive action is called into play not in accommodating for a near object, but in fixing a distant one. It would have been interesting to have this view either criticised or confirmed. After a section which includes chapters on optics—physical, geometrical, and physiological—we come to parts of the subject which are still somewhat obscure. These include the action of visible light on the retinal cells, colour vision, adaptation and after images, and the duplicity theory of vision—that rods and cones are adapted respectively for vision in twilight and daylight. This theory Mr. Duke-Elder now regards as established, though some authorities, notably Dr. Edridge Green, still oppose it. The last chapter deals with visual perceptions and especially with binocular vision.

This work is not an introduction to the study of ophthalmology. The student who should attempt to use it in this way would soon get lost in a maze of technicalities which would take him considerable time to master and this process would postpone unnecessarily his contact with actual clinical problems. It is rather a book of reference for the use of those who already have considerable knowledge of the subject, and contains copious references to authorities on each section of ophthalmology. This volume contains over 1000 illustrations, including seven coloured plates. We look forward to the publication of its fellows, for the work when complete will be a rich contribution to the literature on normal and abnormal conditions of the eye.

Life: Outlines of General Biology.

By Sir J. ARTHUR THOMSON and PATRICK GEDDES. London: Williams and Norgate, Ltd. 1931. Two Vols. Pp. 1515, with 202 figures. 63*s*.

Geddes and Thomson on "The Evolution of Sex" was published in 1889—forty-two years ago. It was a famous book which led to much productive work and thought. Since then they have both been fully active in their respective spheres—Thomson mainly as a biological zoologist, Geddes as a botanist and social reformer. They come together again now in the ripeness of their knowledge and experience and have produced an extraordinary compendium in which they survey the whole field of biological knowledge and speculation with a comprehensive success that one would have thought hardly possible. They deal in turn with the essential characteristics of organisms, with their relation to environment, with physiology, reproduction, behaviour, organic architecture, development, evolution, human biology, and the general theory of life. To any one reader, some parts will naturally seem better than others; to the present reviewer the chapters on evolution appeal as particularly excellent. The easy fluency of Thomson will suit most people better than Geddes's craggy sentences and strange formulæ. But if some parts are better than others, there are no parts which are bad, and if anyone wants to have a serious knowledge of where biology stands to-day we advise him to get the book and spend some weeks or months in reading it right through. Detailed criticism of such a book is obviously impossible but we may note these points about the general outlook of the authors; they believe in evolution, past, present, and future, as the most fundamental fact about live organisms; they are vitalists and hold that mind is an integral part of life; they believe that human life in all its aspects is a proper subject of biological study, however far a cry it may seem from chromosomes to civics.

Diet and Pleasure.

The Art of Enjoying Medical Régimes. By PAUL REBOUX. London: G. P. Putnam's Sons Ltd. 1932. Pp. 248. 6*s*.

THIS small book has the unusual merit of presenting sound and valuable information under the guise of amusing chit-chat; the anecdotes and illustrations are often quite funny, while the general regimens laid down are sound, and the culinary instructions accurate and sometimes elaborate enough to have proceeded from Alexis Soyer—who may have been occasionally the source of inspiration. The plan of the book is extremely simple: some dozen conditions, not so much diseases in themselves as symptoms common to many diseases, have been chosen for discussion, and general information as to the causation is supplied in justification of a series of menus suitable to the patient's needs. Many of these menus call for very expert cooking and the ingredients included in some of them cannot always be readily come by, but the fare provided would be charming. For the help of housewives the author has collected together in lists at the end of the book a series of menus for the week suitable to each of the maladies dealt with. Some of the items would considerably try any cook who wished to produce them.

CITY OF LONDON MATERNITY HOSPITAL.—In 1931 the number of mothers admitted was 1759, an increase of 110; of the 1673 delivered 7 died, or 3·82 per 1000. The patients stayed on an average 14·60 days, and cost £8 6*s*. 2*d*. each—a small decrease. The income was £16,486, and there was left a credit balance of £56.

THE AFFAIRS OF STAMFORD INFIRMARY.—We recorded last week (p. 914) that the Marquess of Exeter, president and chairman of Stamford and Rutland Infirmary, and other governors, had resigned in consequence of a threat that an annual grant of £300 would be withdrawn unless Dr. G. Staveley-Parker, who had been dismissed from the honorary staff, was reinstated. The reinstatement took place, and since then 15 governors, including the president, have resigned. At a meeting of the governors last week a vote of confidence in Lord Exeter was passed unanimously, and a committee of five members was appointed "to investigate and report on the conduct of Dr. Staveley-Parker towards the Infirmary."

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THE LANCET.

LONDON: SATURDAY, APRIL 30, 1932.

ECONOMIC ASPECT OF THE RHEUMATIC DISEASES.

It is, in a sense, unfortunate that the death-rate from chronic rheumatism should be insignificant; were this not so it can be accepted as certain that more attention would long since have been directed to the solution of the many problems connected with this protean disease. The social importance of the rheumatic group of diseases is to-day greater than that of the two more successful claimants to official attention—tuberculosis and cancer. Adult rheumatism is in fact probably the greatest single factor in the production of industrial invalidity and in the depletion of national health insurance funds. Sir WALTER KINNEAR has estimated the cost to the country of this group of diseases as little short of seventeen million pounds a year. While our knowledge of their ætiology and treatment falls very short of what might be desired, it should not be forgotten that considerable stores of knowledge have been accumulated in recent years, and could be made available in the event of any renaissance of interest in the subject. The field is vast; much of the soil is still virgin and presents a legitimate field for specialisation.

The first organised outlet for much of this knowledge, for discussion of the main problems confronting us, and for constructive planning for the future was provided earlier in the year by the Royal Institute of Public Health. This body, recognising the serious social menace of the rheumatic group of diseases to be a subject which could properly and profitably be approached from the public health aspect, organised a series of weekly lectures on "Rheumatism and arthritis as a public health problem," which may be taken as a sign of the awakening of a more progressive attitude towards the problem, and of promising augury for the future. Sir WILLIAM WILLCOX in the opening lecture, while granting the existence of doubt in the origin even of cases properly recognised as of infective nature, expressed his conviction that these diseases are largely preventable and in the earliest stages curable. Dr. FORTESCUE FOX traced the rise of public interest in chronic rheumatism from the early nineteenth century, when the five great spa hospitals were solitary voices of hope crying in a medical wilderness, up to the time of the establishment in London of the British Red Cross Society's experimental clinic at Peto-place three years ago. The care of all diseases of social importance had, he said, in the past gradually been forced by public opinion to become the responsibility of competent bodies. With the recognition by the medical profession of the value of physical methods at some period in almost every rheumatic case, the need for properly organised study and attack was seen, and the establishment of physical treatment centres in industrial areas as part of a comprehensive scheme should follow. Dr. D. M. CONNAN, medical officer of health for the Borough of Bermondsey, which is proposing to deal with arthritis on these lines, pointed to signs that certain municipal and insurance bodies are determined in the near future to see that these methods of treatment are available for the insured population. It would, he thought, be disastrous for the medical profession to find, when their interest was awakened, that others had been before them. Dr. M. B. RAY attributed the lack of progress in our study of the origins of rheumatic disease to reliance on the shibboleth of focal sepsis and to neglect of such factors as endocrine imbalance, exhaustion, heredity, and occupational stress. Dr. A. R. NELIGAN, as the result of prolonged study of methods in other countries, showed how the more concentrated effort abroad is based on a belief that the results repay the cost of the subsidies granted. In the final lecture, of which an abstract appears on p. 967, Dr. W. S. C. COPEMAN outlined a scheme for an organised campaign against rheumatism in this country.

For financial reasons Dr. COPEMAN believes it necessary to segregate diagnosis and investigation in special centres, and to centralise all treatment. But the basis of any such scheme must, as he very reasonably points out, be the insurance practitioner. At the present time when faced with a case of arthritis, whether in the potentially curable or in the advanced stage, his scope is limited by the provisions of the National Health Insurance Acts which provide general practitioner service and nothing more for the insured population. Additional benefits have however been sanctioned for the use of approved societies able to show a surplus on the quinquennial valuation, and four years ago, following on Dr. ALISON GLOVER's report,[1] physical medicine was placed on the list of these additional benefits. Coming sixteenth on the list as it does its application must remain restricted to members of the wealthiest societies. Moreover it is idle to advocate the employment by the insurance practitioner of methods which find no place in the regular teaching of medical schools. If these methods are to become available on a large scale for the insured population, some way must be found whereby treatment can be administered under skilled direction and according to the proper indications in centralised clinics. The success of such clinics, if forthcoming, is assured by the example of the Peto-place clinic, which was the outcome of the demand made by approved societies for the provision of skilled investigation and treatment for their members. Its foundation was the dawn of a new era for the arthritic. In the United States it has been recognised, since Dr. R. W. LOVETT introduced what has been called the Vermont plan, that the management of the arthritic requires a minimum of hospital care and a maximum of after-care. In Massachusetts there is a movement afoot to provide for the 145,000 arthritics in the State a system by which instruction and care is given in the homes after patients have been seen in the clinic.[2] The total amount of crippling, it is believed, has already been reduced by effort of this kind.

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[1] A Report on Chronic Arthritis. Ministry of Health. Reports on Public Health and Medical Subjects. No. 52. H.M. Stationery Office. 1928. 1s. 6d.

IRON REQUIREMENTS IN NUTRITION.

GREAT interest has for many years been shown by students of nutrition in the methods by which iron is obtained by the organism for the purpose of elaborating hæmoglobin. Two problems in particular have engaged their attention—namely, the amount of iron that should be regularly supplied and the chemical form in which it should be presented to ensure adequate utilisation. It may be remembered that for many years the question was debated whether simple inorganic salts or more complicated organic compounds were the normal source of iron. Modern investigations have shown repeatedly that simple iron salts can be effectively utilised, although it seems equally clear that organically bound iron is a satisfactory source and indeed probably forms the greater part of the necessary supply of the average individual. The only available test of the adequacy of the iron supply for a given individual at present is his capacity for maintenance of a normal concentration of hæmoglobin or for producing regeneration of hæmoglobin when this has been reduced from any cause below the normal level; and we are now coming to realise that this capacity depends on other factors besides the quantity of iron supplied and the chemical form in which it is exhibited—for instance the simultaneous supply of copper and possibly other mineral elements. Such facts as these have emerged from studies of nutritional anæmia, a condition experimentally produced in young animals by exclusive diets of milk which has long been known to be relatively deficient in iron.

It is true that some doubts have been cast from time to time on the assumption that milk is necessarily deficient in iron, and not long ago SCOTT and ERF[3] claimed to have shown that young rats could be successfully reared with normal concentrations of hæmoglobin if they were fed exclusively on raw milk from selected cows which were given special diets containing a salt mixture which included iron and copper. Such results, if substantiated, would not invalidate the results of previous experiments on nutritional anæmia and we may therefore consider it proved that the quantitative iron requirements of an individual are not fixed and unalterable, but are liable to vary with the supply of other elements in the diet. This consideration must tend to complicate the problem of the normal minimum iron requirement. Some approximation to this quantity may be obtained by measuring the intake and output of iron by healthy individuals on a good mixed diet which is not likely to be deficient in any known food constitutents, and measurements of this kind have indicated that 10 mg. a day is the average requirement for an adult. For young children it has been calculated that about 0·5 mg. a day should be allowed per kilo of body-weight. If such calculations have a practical interest it is important that the iron content of common foods should be known, and many series of chemical analyses have been published in recent years which deal with this point. A recent report on the iron content of vegetables and fruits has been published in America.[4] The list of articles examined is comprehensive and the results are summarised by classifying them as poor, fair, good, and excellent sources of iron, the criteria being respectively iron contents of less than 0·0004 per cent., between 0·0004 and 0·00079 per cent., between 0·0008 and 0·00159 per cent., and more than 0·0016 per cent. The last group contains kale, parsley, peas, spinach, turnip tops, and water-cress; the first contains apples, pears, peaches, pineapples, and melons. Most of the vegetables eaten in this country are entered under the "fair" or "good" headings and it is interesting to find potatoes classed as a good source of iron. These results confirm the accepted view that vegetables, and particularly leafy vegetables can be an important source of iron in mixed diets.

A SURVEY OF HOSPITAL PRACTICE.

SINCE their origin in mediæval days as refuges for the sick poor, in alliance, loose or close, with the Crown and the Church, the hospitals in this country have undergone a wide expansion of function; and now that their activities have come to include the treatment of those who are not destitute but who can afford to pay a fee, sometimes equalling or even exceeding their cost of maintenance, we have a fundamental change in their position towards society. The January issue of *Nosokomeion*, in a survey of the scope of hospitals in various countries, shows that this expansion of hospital service is not confined to England alone, and in a series of closely written articles sets out the hospital systems in a number of European countries, and in Turkey, the United States, Australia, and Canada. In France the position resembles that found in England; even before the war, hospitals were opening their doors to middle-class patients wishing to make use of the equipment and skilled treatment available there. The hospitals here, moreover, are becoming more and more centres of preventive and sanitary medicine, and there is increasing collaboration between them and the public health services of the country. Attached, for example, to the hospitals of the Assistance Publique are centres for vaccination against small-pox, diphtheria, and tuberculosis—by B C G; antenatal and infant welfare clinics, obstetric and venereal disease clinics, and centres for the study of cancer; mental hygiene and orthopædic clinics are also included, as well as a social welfare service. In Italy, apparently, the hospital service is considerably less comprehensive; indigent patients are visited in their homes by the municipal medical officer and midwife, and are only removed to hospital in an emergency or for surgical treatment.

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[2] New Eng. Jour. Med., Feb. 25th, p. 392.

[3] Scott, E., and Erf, L. A.: Ann. Proc. Internat. Assoc. Dairy and Milk Inspectors, 1931.

[4] Stiebling, H. K.: 1932, United States Dept. of Agriculture, Circular No. 205.

In Germany and Austria, concurrently with a rapid increase in the provision of hospital beds, the scope of hospital service has been enlarged and regularised. Better coördination between the different bodies engaged in preventive or curative medicine has been achieved by the establishment of health services, and of commissions composed of representatives of the public bodies, insurance societies and private organisations, while the hospital clinics carry their work into the realm of social welfare. Australia shows a system differing in several respects from those which have grown up in European countries, and the situation represents well how the rise and growth of institutional medicine must be closely related to the social history of the population. Australian colonisation was carried out by groups of hardy and intelligent people, none of whom fell into the European definition of sick poor. As soon as a small settlement became large enough to support it, a hospital of some kind was set up to serve the sick persons of the community as a whole. These hospitals developed under central Government subsidy and local control, and although the public health system proceeded independently, it was kept in close correlation with the institutions. The administration of the health departments varies in different localities, but in all of them the hospitals cover the range of necessary services for the care of the sick and maintain a large out-patient service. In Canada the development of the hospital system has not been unlike that of Australia, a trail of hospitals following the colonists as they settled. In prairie districts union hospitals have been established, under the combined control of a number of municipalities, taxpayers being admitted at reduced rates. Most of the larger hospitals maintain their own social service departments. There is, however, no system of compulsory or voluntary health insurance, and most of the cost is borne by the patient at a time when he can least afford it. Hospitals are maintained by the fees of private patients supplemented by provincial and municipal grants. In Turkey the troubled transformation from Eastern to Western manners finds its portrait in the hospital position. The provision of hospitals is still quite inadequate for the needs of the population, but their number is showing a steady increase. There is as yet no general administration for public welfare, and the hospitals are subsidised by the various Government departments to which they are attached. There are also in Turkey a certain number of voluntary hospitals; some are due to foreign intervention and are obtaining their support in accordance with the pattern of the countries of their origin. This is interesting, and the growth of a voluntary hospital movement in Turkey might well be watched when the existing position of these institutions in other countries is becoming increasingly difficult, the supply of private subscribers being so seriously threatened.

Of the hospitals of the United States no fair survey can possibly be made in anything like a summary form; the populations are huge, and the different States, though not comparable upon cultural grounds, hold strongly to their autonomy. But everywhere the hospitals are open to all the population, and the well-to-do obtain accommodation at rates presumably adjusted to their means. Naturally this is a source of legitimate anxiety to doctors who are not on the hospital staffs and who suffer from hospital competition, but for reasons already implied there is no general hospital policy in the country, and but little coöperation between public, voluntary, and private institutions. If in the United States such want of order affects a greater number of people, and over a vastly greater geographical range, we can still see in this country a somewhat similar state of affairs. This it was which led to the late Dr. **PARLANE KINLOCH**'s activities on his appointment as chief medical officer for Scotland. He reorganised and strengthened the medical department, and brought the public to appreciate problems of public health and the difficulties in which medical men were too often placed in the task of administration. He secured the establishment of a committee to develop and advise on medical investigations in Scotland, and to relate fundamental work in science to the administration of the health services. The work that he initiated in Scotland had at his untimely death already begun to attract international notice, and such a survey as that supplied by *Nosokomeion* shows how applicable that work was to present day needs.

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ARMY ADVISORY COMMITTEE ON MAXILLO-FACIAL INJURIES.

THE War Office announces the formation of a standing advisory committee under the Director-General, A.M.S., in order to investigate and report on the treatment of maxillo-facial injuries. Colonel J. P. Helliwell, A.M.S., Assistant Director-General for Dental Services, will be the chairman of the committee, and Major S. H. Woods (Army Dental Corps), its secretary. Mr. W. Kelsey Fry has been appointed by the British Dental Association, and the other members at present appointed are Sir Harold Gillies and Mr. W. Warwick James. The committee will make recommendations for the provision of special facilities and equipment for these cases, the general methods of treatment, and the training of dental officers in the principles of preliminary treatment in the field.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.—Mr. R. Barclay Ness, the president, took the chair at the Finlayson lecture delivered in the hall of the Faculty on April 21st. The lecturer, Sir D'Arcy Power, took as his subject the Progress of Surgery in a London Hospital, 1880–1930. A vote of thanks was proposed by Prof. T. K. Munro.

it has been recognised, since Dr. R. W. LOVETT introduced what has been called the Vermont plan, that the management of the arthritic requires a minimum of hospital care and a maximum of after-care. In Massachusetts there is a movement afoot to provide for the 145,000 arthritics in the State a system by which instruction and care is given in the homes after patients have been seen in the clinic.[2] The total amount of crippling, it is believed, has already been reduced by effort of this kind.

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IRON REQUIREMENTS IN NUTRITION.

GREAT interest has for many years been shown by students of nutrition in the methods by which iron is obtained by the organism for the purpose of elaborating hæmoglobin. Two problems in particular have engaged their attention—namely, the amount of iron that should be regularly supplied and the chemical form in which it should be presented to ensure adequate utilisation. It may be remembered that for many years the question was debated whether simple inorganic salts or more complicated organic compounds were the normal source of iron. Modern investigations have shown repeatedly that simple iron salts can be effectively utilised, although it seems equally clear that organically bound iron is a satisfactory source and indeed probably forms the greater part of the necessary supply of the average individual. The only available test of the adequacy of the iron supply for a given individual at present is his capacity for maintenance of a normal concentration of hæmoglobin or for producing regeneration of hæmoglobin when this has been reduced from any cause below the normal level; and we are now coming to realise that this capacity depends on other factors besides the quantity of iron supplied and the chemical form in which it is exhibited—for instance the simultaneous supply of copper and possibly other mineral elements. Such facts as these have emerged from studies of nutritional anæmia, a condition experimentally produced in young animals by exclusive diets of milk which has long been known to be relatively deficient in iron.

It is true that some doubts have been cast from time to time on the assumption that milk is necessarily deficient in iron, and not long ago SCOTT and ERF[3] claimed to have shown that young rats could be successfully reared with normal concentrations of hæmoglobin if they were fed exclusively on raw milk from selected cows which were given special diets containing a salt mixture which included iron and copper. Such results, if substantiated, would not invalidate the results of previous experiments on nutritional anæmia and we may therefore consider it proved that the quantitative iron requirements of an individual are not fixed and unalterable, but are liable to vary with the supply of other elements in the diet. This consideration must tend to complicate the problem of the normal minimum iron requirement. Some approximation to this quantity may be obtained by measuring the intake and output of iron by healthy individuals on a good mixed diet which is not likely to be deficient in any known food constitutents, and measurements of this kind have indicated that 10 mg. a day is the average requirement for an adult. For young children it has been calculated that about 0·5 mg. a day should be allowed per kilo of body-weight. If such calculations have a practical interest it is important that the iron content of common foods should be known, and many series of chemical analyses have been published in recent years which deal with this point. A recent report on the iron content of vegetables and fruits has been published in America.[4] The list of articles examined is comprehensive and the results are summarised by classifying them as poor, fair, good, and excellent sources of iron, the criteria being respectively iron contents of less than 0·0004 per cent., between 0·0004 and 0·00079 per cent., between 0·0008 and 0·00159 per cent.. and more than 0·0016 per cent. The last group contains kale, parsley, peas, spinach, turnip tops, and water-cress; the first contains apples, pears, peaches, pineapples, and melons. Most of the vegetables eaten in this country are entered under the "fair" or "good" headings and it is interesting to find potatoes classed as a good source of iron. These results confirm the accepted view that vegetables, and particularly leafy vegetables can be an important source of iron in mixed diets.

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A SURVEY OF HOSPITAL PRACTICE.

SINCE their origin in mediæval days as refuges for the sick poor, in alliance, loose or close, with the Crown and the Church, the hospitals in this country have undergone a wide expansion of function; and now that their activities have come to include the treatment of those who are not destitute but who can afford to pay a fee, sometimes equalling or even exceeding their cost of maintenance, we have a fundamental change in their position towards society. The January issue of *Nosokomeion*,[1] in a survey of the scope of hospitals in various countries, shows that this expansion of hospital service is not confined to England alone, and in a series of closely written articles sets out the hospital systems in a number of European countries, and in Turkey, the United States, Australia, and Canada. In France the position resembles that found in England; even before the war, hospitals were opening their doors to middle-class patients wishing to make use of the equipment and skilled treatment available there. The hospitals here, moreover, are becoming more and more centres of preventive and sanitary medicine, and there is increasing collaboration between them and the public health services of the country. Attached, for example, to the hospitals of the Assistance Publique are centres for and Wells concludes that the strain was one of those which in addition to the power of producing a necrotising toxin also possessed a high degree of "invasiveness." He urges the need for more careful study of all intradermal virulence tests of suspected diphtheria cultures showing local reactions in both protected and unprotected guinea-pigs before calling them negative especially in routine work with field cultures. Although its importance is obvious the observation of Wells is not new. Okell and Parish found that the intraperitoneal injection of antitoxin did not sufficiently protect against some strains, the control animal showing definite local lesions. Owing to similar experiences W. Mair[3,4] has given up the use of the control animal when testing pure cultures as unnecessary and indeed as misleading "if it is not remembered that rare strains of virulent *C. diphtheriæ* occur with which even very large doses of antitoxin do not prevent cutaneous lesions." Allison also finds the use of the control animal unnecessary when working with pure cultures. If field cultures are being tested a control animal is essential.

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[2] New Eng. Jour. Med., Feb. 25th, p. 392.

[3] Scott, E., and Erf, L. A.: Ann. Proc. Internat. Assoc. Dairy and Milk Inspectors, 1931.

[4] Stiebling, H. K.: 1932, United States Dept. of Agriculture, Circular No. 205.

PUERPERAL SEPSIS IN GLASGOW.

THE Puerperal Pyrexia Regulations, and administrative measures following their enforcement, have made for greater use of hospital facilities and for notification: nevertheless, Dr. A. S. M. Macgregor, addressing the Section of Epidemiology of the Royal Society of Medicine on April 22nd, showed that the maternal mortality-rate from puerperal sepsis in Glasgow has not diminished. Certification in Glasgow, he admitted, had been much more accurate in recent years; in the past, cases had sometimes been certified as pneumonia or septicæmia without any reference to childbirth, and increasing frankness probably had some effect in maintaining the returns at a high level. More patients, however, are treated in hospital, 93 per cent. of those notified in Glasgow being admitted to fever hospitals or the isolation blocks of maternity homes, and the case-mortality is falling. Delay in admission to hospital does not seem to be responsible for the high death-rate, since 62 per cent. of 200 fatal cases investigated were admitted within three days of the onset of symptoms. Cases with infection reaching the blood-stream form the most fatal group in the Glasgow investigation, and Dr. Macgregor suggests that streptococcal infections may be exceptionally virulent in Glasgow and the north country. Using antiscarlatinal serum there was sustained improvement in a few cases, but in many no change was noted. Serum has, however, given promising results when used prophylactically in cases with severe lacerations. Dr. Macgregor laid special stress on the reduction of the chances of infection; the forceps rate in the series of 200 fatal cases was 24 per cent., and trauma was present in some 40 per cent. of cases. The first interim report of the departmental committee on maternal mortality indicated strongly that improved obstetric practice would reduce the mortality to some extent, but if a more virulent streptococcus is prevalent in the north, the solution is still to seek; in the nature of things the rigid asepsis of a surgical operation can never be achieved in midwifery, and chances of infection must always exist. Dr. Remington Hobbs, in the discussion which followed, spoke of the value of glycerin irrigation, while other speakers dealt with administrative difficulties. Dr. Clark Trotter, medical officer of health for Islington, said he had had his returns questioned by the London County Council on the grounds that he was making out a much worse case for his borough than other boroughs were able to do. This was because the deaths connected with childbirth were notified as such, and not merely under the head of the terminal condition. Dr. D. Sage Sutherland spoke of the admirable administrative measures in Manchester, to which he attributed the low mortality-rate from puerperal fever in that city. He mentioned the good results of intravenous treatment with arsenical drugs combined with glycerin-iodine irrigation of the uterus, and gave it as his impression that, if the traumatic factor could be eliminated from midwifery, hospital treatment would be effective in dealing with any cases of sepsis which might arise, and in reducing the mortality to small proportions. It was remarkable throughout the discussion how little emphasis was laid on carrier infection. Dr. Macgregor admitted that he fought shy of it because it would increase administrative difficulties so greatly if it should prove to have any marked influence, but he also expressed doubt of its importance.

BOTHRIOCEPHALUS ANÆMIA.

Albrecht in 1883 was probably the first to call attention to the association of helminthiasis and pernicious anæmia. J. W. Birkeland,[1] who has reviewed subsequent work on infestation with *Diphyllobothrium latum,* concludes that the anæmia is almost always of the pernicious type and indistinguishable from the idiopathic form except in small points. Leucopenia is less conspicuous, and immature white cells are to be seen. Achlorhydria is found in only some 80 per cent. of cases, and the acid may return after discharge of the worm. Organic nervous involvement is extremely rare, while glossitis and stomatitis are common even in those cases without anæmia. The causal relationship of the worm to the anæmia has long been discussed. There appears to be a strong racial predisposition: 391 of 508 reported cases come from Finland, and of those occurring in America 21 were Finnish emigrants. Japan, Italy, and Rumania, though heavily infected, have reported only four cases. Even in Finland, however, anæmia results in only 0·1–0·5 per cent. of affected persons, which suggests that apart from a racial element there is a further personal predisposing factor. In 15 cases the anæmia has been noted in two or more members of the same family, and in four cases it has accompanied "idiopathic" pernicious anæmia in some other member of the family. Further, there are 17 cases in which many years after expulsion of the worm idiopathic pernicious anæmia has developed. The latter might be considered coincidence; the preponderance of anæmia in Finns must, however, have some significance, while the dramatic hæmatological and clinical improvement following expulsion of the worm is further proof of a definite causal relationship. G. Becker,[2] who studied the effect of liver treatment in a large series of cases, found it was almost always successful, and was followed by a typical reticulocyte response. The same response was seen after expulsion of the worm when no liver was given, and in these cases the cure was permanent, whereas if the worm was still present liver treatment had to be continued indefinitely. The quantity or quality of the worm or the duration of infestation appears to be without significance. There is no satisfactory evidence that the worm secretes toxins

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[4] Jour. Path. and Bact., 1928, xxxi., 136.

[1] Birkeland: Medicine, Baltimore, 1932, xi., 1.

[2] Becker: Acta Med. Scandinav., 1931, lxxv., 227.

ANNOTATIONS

SPEECH AND INTELLIGENCE.

THERE is probably no better index of subnormality of intelligence than marked retardation in the first appearance of speech and, following upon that, its unusually prolonged development. There are a few children of normal intelligence who show some degree of delay in speech acquirement. There are also certain "freak" cases who may be almost dumb up to a certain stage and then begin to speak with surprising fluency. There are also, of course, the children born deaf who are necessarily dumb; but, putting all these aside, there can be no doubt that an undue delay of speech is, as a rule, a stigma of mental defect. It is a more reliable indicator of mental subnormality than the frequently parallel lateness of development in teething and walking, which may be due to other causes, such as rickets. A paper in this issue by Dr. A. G. Morison provides an interesting study of the speech phenomena manifested by a group of defectives educable and ineducable in respect of lateness of development, indistinctness of articulation, lalling, echolalia, use of words, and idioglossia. The figures he gives clearly show a relation between relative retardation of speech and intelligence, none of the educable cases having started to speak later than 5 years, while 18 out of 34 ineducables did not begin to speak until after 5, 7 of them even over 9 years of age. The persistence of lalling for periods of 5 to 6 years after the commencement of speech in a group of high-grade cases is also worthy of note. It is a mark of the mental inertia which, even more than lack of intelligence, is the distinguishing mark of many defectives. Morison's most surprising observation, however, is the correlation between the results of intelligence tests and a vocabulary test, which appear to agree with the results of Terman, who was responsible for the Stanford revision which Morison used. One would have expected a vocabulary test to be very largely affected by the home environment of the child, and certainly all observers have not obtained similar results.

The whole paper forms a useful corrective to the tendency among parents and sometimes amongst practitioners to a too cheerful prognosis in cases of late and imperfect speech. There are a certain number of children who make no effort to talk because their wants are supplied by assiduous attendants, and this form of laziness is compatible with plenty of intelligence. But in general the normal child should be speaking a few words at one year, and should articulate clearly between three and four. Where these figures are much exceeded, a somewhat guarded prognosis regarding ultimate mental development is necessary.

AN ANTIDOTE FOR AVERTIN?

FROM previous work in connexion with pregnancy Dr. Adolph Bolliger[1] was led to believe that thiosulphate was used in the process of detoxication in pregnancy. He therefore sought to demonstrate the detoxicating properties of the substance in a more standardised intoxication produced experimentally. For this purpose he employed avertin, and the results he achieved may well prove of some importance in the clinical use of this anæsthetic. Dogs were given the minimal lethal dose of avertin. Sodium thiosulphate was administered intravenously, subcutaneously, or rectally either before, with, or after the avertin injection. The group of experiments demonstrated that in the laboratory at least avertin anæsthesia can be controlled by adding varying amounts of sodium thiosulphate to the avertin solution. Simultaneous rectal administration of avertin and hypertonic sodium thiosulphate delays the absorption of the avertin to such an extent that with a 30 per cent. solution of the thiosulphate anæsthesia cannot be obtained. Bolliger states that the delayed and diminished absorption of avertin in the presence of sodium thiosulphate probably represents a special case of a general law, that when two crystalloids are given rectally each may influence the absorption of the other in proportion to their respective amounts present. This delaying action might be useful in obstetrics. In cases of overdose he found that high rectal irrigation with warm hypertonic sodium thiosulphate solution acted as a restorative if applied before cardiac failure took place. This may have a practical bearing, since at present we have no definite antidote for an overdose of avertin. Thyroxin takes so long to act as to be rarely of use clinically.

VIRULENT STRAINS OF DIPHTHERIA.

ALTHOUGH, as V. D. Allison[1] reports, it is possible, by using a special medium, to recognise many avirulent strains of *Corynebacterium diphtheriæ* by cultural characteristics alone, the most reliable method of differentiating between virulent and avirulent strains of the organism is the test in vivo. The intradermal method is that most usually employed. As a rule, two guinea-pigs for test and control respectively are used. The bellies of both are carefully epilated in the way described by C. C. Okell and H. J. Parish (1926). Following the technique of Eagleton and Baxter (1921), the control animal receives intraperitoneally a protecting dose of antitoxin the night before, whilst the test animal is injected by the same route with a "following dose" four or five hours after inoculation. W. Mair[2] prefers to give the test animal antitoxin subcutaneously immediately after inoculation. The inoculum may consist of a suspension of a field or mixed culture or preferably of a pure culture of the strain to be tested. For comparison, a suspension of a pure culture of known virulence is also inoculated. Virulence of the strain is indicated by the occurrence upon the skin of the test animal of a rose-red swelling which ultimately becomes necrotic. The skin of the control animal shows nothing or a faint transient flush (Eagleton and Baxter). Any lesion upon the skin of the control animal is regarded as due not to toxin but to some other cause. The appearance of lesions upon both animals would thus be liable to be read as a negative result and the strain recorded as avirulent.

J. R. Wells[3] has lately drawn attention to a complication of the intradermal method. When testing a number of recently isolated pure cultures it was found that one culture produced severe necrosis at the site of inoculation in both test and control animals. The latter had been protected two hours previously by intraperitoneal injection of 400 units of diphtheria antitoxin. Subsequent investigation of the culture in question ruled out the possibility of contamination

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[1] Med. Jour. of Australia, Jan. 23rd, p. 125.

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[1] L.C.C. Ann. Rep., 1930, vol. iv., part iii., p. 17. See THE LANCET, April 2nd, p. 730.

[2] Jour. Path. and Bact., 1930, xxxiii., 230.

[3] Amer. Jour. Pub. Health, March, 1932, p. 308.

year—and this rate of wastage will soon lessen since about half of all the doctors are now under 40, compared with 28 per cent. in 1920. Some 30 to 40 years ago there was also a wave of congestion in the medical profession in Norway, but then the United States was willing to absorb the surplus. This is no longer so; the Norwegian doctors now practising in the U.S.A. belong exclusively to the older generation. It should be added that the population of Norway in 1930 was 2,810,800.

DEAD SPACE.

THE epidemiological importance attributed to the presence of dead space in dormitories and class-rooms in a discussion reported on another page should be noted by those who are concerned with the conversion of buildings, erected for other purposes, to serve as schools or hospitals. Dead space may be defined as that space in a room which is above the level of the window openings. A moderate amount, say one foot in height in a small room or two in a very large room, is probably of little importance, but a large space of three or four feet or more in height above the level of the window openings has dangers unsuspected by the casual visitor who may be inclined to praise a high "airy" room. Warm polluted air which rises to fill a dead space accumulates undisturbed, cools, and falls again. carrying with it infected particles which should have been removed by ventilation. Definite evidence of the harmful effect of such dead space is not easy to obtain, but experienced observers are developing a strong prejudice against the adaptation of palaces, hotels, and country houses as residential institutions. The condition is difficult and expensive to remedy, needing a structural change or the provision of much extra window space. It is not always easy to detect patches of stagnant air, though tests with smoke, ammonium chloride evaporated over a lamp, titanium chloride, or smouldering phosphorus can be used effectively. There is, of course, considerable atmospheric turbulence in any room. The technique of making smoke rings would not be so difficult to acquire if the air were really still, but even if small eddies and movements are present, macroscopic stagnation may occur in the upper strata which are largely unaffected by open windows. The free use of a katathermometer or a sensitive form of anemometer in different parts of a very high room might help to indicate stagnation, which could be remedied by special devices. But though one of the speakers at the discussion was inclined to believe that lofty dormitories are advantageous, most epidemiologists now hold that large dormitories as well as large hospital wards should not be more than 12 feet or less than 11 feet high, and that in smaller dormitories a height of 10 feet is sufficient. Air changes should be effected by the introduction of fresh air and the removal of heated breathed air and not by diffusion or convection into a dead space used as a reserve.

NATIONAL RADIUM CENTRES IN THE PROVINCES.

A MEMORANDUM (Circular 1276) from the Ministry of Health draws the attention of county and county borough councils to the facilities available through the establishment of eight national radium centres in provincial voluntary hospitals in England and Wales. The centres are the Royal Infirmaries at Bristol, Liverpool, Manchester, Newcastle-upon-Tyne, Sheffield, and Cardiff. the Birmingham General Hospital, and the General Infirmary, Leeds, and the Radium Commission has in mind the establishment of a number of smaller regional centres, chiefly to meet the needs of the East Anglian and south-western districts. The hospitals concerned undertake certain obligations, designed to ensure that the radium is used to best advantage and that full records of cases, including follow up, are kept. They are pledged to accept and to treat suitable and properly accredited patients from any source, including such as come from rate-aided institutions. Local authorities are urged to make arrangements to secure for the inhabitants of their area the fullest benefit from the facilities provided by the centres.

VETERANS.

ON April 30th, the date of our present issue, Dr. James Gairdner. of Crieff. will have been a registered medical practitioner for 65 years. But others have been registered longer. A survey of the 55,604 names in the Medical Register, 1932, shows that Dr. Jacob Dickson Hunter, of Arequipa, Peru, registered on Dec. 31st, 1858; Dr. James Middleton. of Stow, Midlothian, on March 20th, 1861; Sir James Crichton Browne. on July 5th. 1862; Dr. William Goldie Stevens, of Renfrew, on Oct. 19th. 1863; and Dr. James Carmichael, of Edinburgh, on Jan. 11th, 1866. All were registered in Scotland.

MICROSCOPY OF VIRUSES.

THOSE who took part in the discussion on April 20th at the Royal Microscopical Society on the microscopy of filtrable viruses fell into two quite definite groups. There were the microscopists whose main concern was the technique of the microscopy of minute particles—a not unreasonable attitude considering the subject and setting of the discussion; and the pathologists who were interested in microscopy only in so far as it formed one of the various methods necessary to the study and identification of viruses. This difference in attitude gave the impression, quite an erroneous one, that the pathologists were indifferent to the niceties of microscopical technique, and that for the microscopists the study of filtrable viruses could be summed up in one word—microscopy. In opening the discussion Mr. A. E. Barnard referred to the radical change in attitude to the problem of the nature of filtrable viruses which had taken place in the last three years. As the majority of workers in this country now accept the view that these agents are minute micro-organisms, the major problem confronting workers is to establish the nature of the minute bodies whose presence, in the case of some filtrable viruses at any rate, has been known of for so long. In this task Mr. Barnard would give pride of place to the examination of these bodies, unstained and in the living state, by means of dark-ground condensers with ultra-violet light; most convincing was the demonstration he gave of the superiority of the technique which he has evolved over the conventional method of examining stained preparations by visual light. That does not mean that the latter method is without value for, as Dr. S. P. Bedson pointed out, the minute bodies in psittacosis material. whose discovery was the work of staining methods alone. had been shown to be the virus, and the same could be said of the Paschen bodies and Borrel bodies of vaccinia and fowl-pox respectively. Nor is technique proof against erroneous conclusions.

or hæmolysins, or that the blood of carriers contains antisubstances. Birkeland believes that the rôle of the worm is only that of a precipitating factor or trigger mechanism. It is possible that it acts by destroying the effective principle necessary for hæmopoiesis normally produced in the stomach, and that when this is administered in large quantities in the form of liver, there is enough for both parasite and host. Systematic anthelmintic measures have reduced the mortality from nearly 100 per cent. to 12 per cent. Further interesting evidence as to the part played by the worm might be obtained by use of the ingenious technique used by H. S. Wells in the investigation of hookworm anæmia described in an annotation last week (p. 893). That the mechanism is essentially different is suggested by the fact that hookworm anæmia is hypochromic in character and is relieved by iron.

CYTOCHROME.

PARTICULAR interest centres around the pigments on which the processes of life depend. The outstanding properties of hæmoglobin and of chlorophyll have long been known, although there is reason to suspect that they are not fully known even now; but it was only in 1925 that Prof. D. Keilin described to the Royal Society a yellow pigment with a respiratory function, common to animals, yeasts, and some of the higher plants, which he called cytochrome. Recent work on this pigment by Dr. C. B. Coulter and Dr. Florence Stone, of Columbia University, has established the fact that cytochrome belongs to the porphyrin group of pigments which includes both hæmoglobin and chlorophyll; but whereas in the blood the porphyrins are combined with iron, in the leaves of plants they are combined with magnesium, while according to the work done at Columbia they are combined with iron and copper to make up cytochrome. In contrast with chlorophyll, by means of which starch is built up from the carbon dioxide present in the air, cytochrome serves the opposite purpose of breaking down carbohydrates. Dr. Coulter has been investigating the occurrence of cytochrome in various malignant tumours, finding it present in some and absent in others. He has also noted that the amount of this pigment set free in the development of diphtheria cultures is strictly proportional to the amount of toxin formed, and in this observation lies the brilliant possibility of being able to estimate the amount of toxin without resort to biological test. A small amount of cytochrome is present in tuberculin. A short notice of this new work appeared in the *New York Times* of April 5th, and the publication of full details will be awaited with interest.

HORSESHOE KIDNEY.

A PAPER by Howard S. Jeck[1] deals fully with the precautions to be taken in the operative treatment of horseshoe kidney. In the records of autopsies at the Bellevue Hospital, New York, he finds that the condition is present once in every 643 cases—a greater incidence than is usually given. The average age at death—excluding cases in infants under one year of age—was 43 years, which supports the view that the span of life of these patients is below the normal. In all the 26 cases discovered the fusion of the kidneys was by an isthmus connecting the lower poles, and in one of them there appeared to be only one ureter. With the steadily increasing use of urography the pre-operative diagnosis is becoming more and more common; since 1918 four of these cases have been operated upon at the Bellevue Hospital, in two of which a pre-operative diagnosis was made. Of the other two one was operated upon in 1918 when urography was not so frequently carried out, and in the other a complete examination could not be made owing to the poor condition of the patient. Jeck enumerates the points to be noted in diagnosis by means of a urogram, and then makes mention of the break which is found in the continuity of the psoas outline shadow, a feature which was described as recently as last year at the meeting of the American Urological Association. The pre-operative diagnosis is obviously of great help to the surgeon, and adds to the ease and safety of the operation. If a heminephrectomy is contemplated the operator must be satisfied as to the function of the remaining half of the kidney—that it has its own ureter and adequate blood-supply. The division of the isthmus calls for care. If of the fibrous type it can be divided between clamps, and then a whipover stitch is used on the side of the remaining segment; if, however, it is composed of parenchyma the difficulties are greater, the isthmus may be divided by a knife or cautery, and a wedge-shaped type of incision is to be recommended so that the lips of the incision can be opposed. It is also to be remembered that a calyx may extend into the isthmus, and if so it must be avoided or a urinary fistula may result. In the discussion which followed the reading of Dr. Jeck's paper at the annual meeting of the American Medical Association, Dr. R. Gutierrez referred to what he called the horseshoe kidney syndrome characterised by epigastric or umbilical pain radiating to the lumbar region, chronic constipation, and urinary disturbances. Dr. W. E. Stevens reported an interesting case in which a third pelvis and ureter arose from the isthmus.

CONGESTION IN THE MEDICAL PROFESSION IN NORWAY.

FIGURES compiled by Dr. H. Blich Holst[1] reveal a state of affairs very serious for the younger members of the medical profession in Norway. At the beginning of 1932 there were 1888 persons qualified to practise medicine in Norway, where in 1925 the corresponding figure was only 1504. In 1930 the number of medical students had risen to 1540; in other words, the medical students in this year outnumbered all the fully qualified doctors in the land in 1925. At the beginning of 1932 there were 795 medical students who had got so far as to pass their preliminary medical examinations, and were thus qualified to begin clinical work in the hospitals. But the accommodation in the two teaching hospitals in Oslo allows for the absorption of only 50 students each term. The students at the end of this formidable queue would, accordingly, have to wait eight years before they could resume their medical studies. In 1931 a new crop of 172 students entered for the course of medical studies. Dr. Holst exclaims in this connexion: "What on earth are these poor fellows thinking of?" He finds the prospects more than sad for the coming generation. Even if every other man falls out of the queue in the coming eight years, there will still be some 400 who will emerge as doctors during the next few years, and there is not room for them all. The normal annual wastage for several years has been under 2 per cent.—i.e., under 40 a

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[1] Jour. Amer. Med. Assoc., 1932, xcviii., 603.

[1] Tidsskr. f. d. Norske Laegefor., April 15th.

SPECIAL ARTICLES

MEDICINE AND THE LAW.

Sale of Herbal Remedies: a Prosecution.

NEARLY 400 years ago Parliament passed an Act to protect "divers honest persons, as well men as women, whom God hath endued with the knowledge of the nature, kind and operation of certain herbs, roots and waters." The Act declared that these persons were taking nothing for their pains or cunning but had ministered to poor people "only for neighbourhood and God's sake out of pity and charity"; yet they were being sued, troubled, and vexed by the Company and Fellowship of Surgeons of London who were making the most of a recent statute which restricted the practice of physic and surgery to persons approved and admitted by prescribed authority. Parliament consequently enacted that for the future everybody having this knowledge and experience of herbs, roots, and waters either by speculation or by practice may use his skill in ministering to "any outward sore, uncome, wound, apostemations, outward swelling or disease" any "herbs, ointments, baths, pultes and emplaisters" without being sued, vexed, or troubled by the Company of Surgeons.

This old Act (33 and 34 Henry VIII., ch. 8) still stands upon the statute book unrepealed. The herbalists may cite it as their charter, though anyone who, owing to his ignorance of the properties and scientific application of dangerous drugs, administers an improper dose, may be found criminally liable. Such restrictions upon herbalists' remedies as modern law contains are mostly provisions enacted in the interests of the revenue. Under these the Society of Herbalists, Ltd., was fined at Westminster police-court on April 19th, upon a series of charges under three heads. First it was complained by the Commissioners of Customs and Excise that the defendant Society was selling medicines without complying with the stamp duty, though warned last July that the law was being ignored. Secondly, the Society was charged with selling on unlicensed premises; it had always had a licence in respect of its Baker-street premises but it had none for its other establishments. The licence fee is only 5s., but here again the law was being ignored. Thirdly, the Society was charged with selling a herbal mixture for smoking, contrary to Section 8 of the Tobacco Act, 1842, which forbids anyone to "cut, grind, pound, colour, stain, dye, or manufacture any leaves or any herb, or plant, moss or weed, or any wood, chicory, commings or roots of malt or any other vegetable or other matter or materials to imitate or resemble tobacco or snuff." It is an offence under this section to prepare any such materials for mixture with tobacco or snuff, or to have them in possession for this purpose.

The penalties under these various provisions are substantial. The magistrate did not find that the Society had made any deliberate attempt to evade payment of duties, but he thought there had been great carelessness. He inflicted a series of fines which, with costs, amounted to £147 11s. The proceedings under the Tobacco Act were dismissed without conviction on payment of £5 5s. costs. Possibly the magistrate thought this ninety-year-old statute an indifferent engine of the law. Our legislation about the sale of medicines, indeed, might also well be modernised.

Septicæmia and Accident Insurance.

Many fatal cases of septicæmia are the sequelæ of an accident. The King's Bench Division has had to consider whether a fatal case of septicæmia, apparently originating from a pimple at the junction of the nostril and lip, could properly be described as a death due to accident. The deceased had insured himself at Lloyd's under a policy entitling his legal representatives to about £83,000 if (within the period covered) his death should be directly due to bodily injury by accident. The policy expressly stipulated that it was not to cover either death directly or indirectly caused or contributed to by disease or natural causes, or death directly or indirectly resulting from medical or surgical treatment. The widow and executors, in claiming under the policy, had therefore to show that the death was due to accident. The deceased had died while on a trip round the world in a liner with his wife and a friend. The friend had endeavoured to help him by squeezing the pimple. The underwriters, resisting the claim, argued that death was due to natural causes; they did not need, it seems, to rely on the argument that the amateur assistance given by the friend amounted to "medical or surgical treatment" within the wording of the policy.

The evidence of the ship's doctor, taken on commission, was read at the trial; but it threw little light on the origin of the septicæmia. The friend who had treated the pimple described what had occurred. The deceased seems to have been subject to boils and pimples which had been similarly treated before. On this particular occasion, it was said, a probe was used, but no pus was brought away in the squeezing. The plaintiffs relied on this fact as establishing an accident causing death, because the pus, they said, was driven inwards and the infection, up to that time superficial, entered the deeper tissues with fatal consequences. Mr. Justice Roche was unable to see that the treatment, if applied as described, had the effect suggested. It was doubtful, he said, whether the friend's treatment did any mischief; he found himself unable to see that what was done could have caused injury. The plaintiffs had failed to establish that there was any accident or accidental injury giving rise to the *furuncle*. There was no evidence that the pimple was due to an insect bite; Sir Bernard Spilsbury's evidence had shown that it was probably due to acne lesions which are the result of natural disease and natural infection. The fact that death was caused by "bodily injury by accident" was not proved; judgment was therefore given for the defendants with costs.

Private Cars and Conveyance of "Goods or Burden."

A curious situation has arisen under the law relating to the taxation of motor vehicles. Vehicles "constructed or adapted for use and used for the conveyance of goods or burden of any description, whether in the course of trade or otherwise," pay mechanically propelled vehicles duty at a higher rate than ordinary private motor-cars. The revenue is protected by clauses which inter alia impose a fine if a vehicle is unlawfully used for a purpose to which a higher rate of duty applies. Under this provision a greengrocer and florist was fined at Cardiff for using a 16 h.p. motor-car of the ordinary saloon type to carry vegetables, fruit, and flowers.

Prof. J. C. G. Ledingham instanced the organism of bovine pleuro-pneumonia which, on the strength of ultra-violet microscopy, had been credited with a life cycle consisting of spherical forms which multiplied by budding, whereas his own investigations of this organism in stained preparations led him to the conclusion that it had fungal affinities and that the filtrable phase consisted of minute spores which were developed in conidia. There can be no doubt however that Mr. Barnard has supplied virus workers with a method of investigation of which the value will be increasingly apparent as more workers adopt the technique; as far as obtaining virtual images of these minute organisms it stands alone.

NEPHROSTOMY.

Prof. Hugh Cabot is paying one of his now too rare visits to this country and spreading a trail of stimulating ideas in his wake. His remarks at a meeting of the Urological Section of the Royal Society of Medicine, a report of which will appear in THE LANCET next week, should do much to revive the interest of British urologists in a useful method of restoring the function of badly damaged kidneys, and of saving many that would otherwise have to be removed. Prof. Cabot makes no claim to have introduced a new method of treatment. As long ago as the end of last century nephrostomy was advocated by Henry Morris in this country in cases of obstructed and hydronephrotic kidneys. But though this operation may have been performed frequently in the past, recent writings on urological subjects give little indication that it is in common use at the present time, and it would be ungracious to pretend that British urologists need no reminder of its value. It is often more difficult to rehabilitate an old method than to produce a new one, and genito-urinary surgeons will be grateful to Prof. Cabot for his attempt to revive drainage of the kidney as a potent means of restoring function, even when there appears to be no function left to restore. Prof. Cabot used the term nephrostomy in its strict sense to mean drainage through the kidney, whether temporary or permanent, as opposed to pyelostomy, a drainage through the pelvis, and nephrotomy or pyelotomy to mean incision only without drainage. He discussed its use in various renal conditions such as calculous disease, hydronephrosis, and chronic infections, and pointed out that drainage through the renal substance has the effect of restoring renal function rapidly. The cases of restored function that he quoted were most encouraging; they had obviously been very thoroughly examined and tested for renal function by all the usual methods, and Prof. Cabot was able to state that many kidneys which showed no function at all would recover as much as half the functional capacity of a normal kidney after drainage. He made no exaggerated claims for nephrostomy, and indeed erred on the side of modesty in stating his case in favour of conservative renal surgery in place of nephrectomy for apparently functionless kidneys. His work may well form the starting point of a new interest in the subject among urologists in this country.

THE NOMENCLATURE OF DISEASES.

THE classical volume, revised every 10 years by a joint committee appointed by the Royal College of Physicians, on the Nomenclature of Diseases, has now reached its sixth edition.[1] Though it is dated 1931 it has only just been issued, at a price (5s.) to those not on the free list which is more than double that of the fifth edition published in 1918. Few will grudge the extra charge in view of the better production of the volume, now in the convenient royal octavo format which is being adopted for most official publications in this country. Eighty of these larger pages are now devoted to the diseases of the various systems of the body, against 158 in the former edition, the space having been saved mainly through the use of double columns and the more advantageous use of white space between subsections instead of between each name. Appendices include Tumours and Cysts, Malformations, Parasites and Vectors of Disease, Poisons, and an illuminating list of additions and alterations. Among the additions we notice abortus fever, hookworm disease, tularæmia; many rare neurological conditions; air-sickness, mountain sickness, serum sickness; paraphrenia and schizophrenia; thrombophlebitis migrans; asbestosis and massive collapse of the lung; acidosis, alkalosis, ketosis; deficiency diseases; embolic focal nephritis, glomerulo-tubular nephritis, nephrosis, lipoid and toxic, and toxæmic kidney. These terms among many others indicate conditions less generally recognised or at least less clearly defined in 1918, and provide an encouraging reminder of the progress made in the last 10 years. On the other hand, at least one term, status thymo-lymphaticus, has been allowed to survive when the condition it represents is no longer recognised as a pathological entity. The doubt expressed in a memorandum by the subcommittee on classification, whether the sections of the Appendix dealing respectively with parasites and vectors of disease and with poisons should be excluded, has happily been resolved, for this edition at least, in favour of their retention. We trust that their usefulness will be so cordially proclaimed that they will find a place in future editions. A searching examination of the index has revealed neither error nor the slightest ambiguity. This is an admirable production which reflects credit on the distinguished men who have been honoured by an invitation to help in its compilation, and especially on Dr. Cecil Bosanquet who has ably fulfilled the task of secretary and editor.

MEDICAL RESEARCH FELLOWSHIPS.—The Rockefeller Medical Fellowships and the Dorothy Temple Cross Research Fellowships in Tuberculosis for the academic year 1932–33 will shortly be awarded by the Medical Research Council. The value of these Fellowships will be not less than £350, exclusive of allowances.

Fellowships are awarded by the Council, in accordance with the desire of the Rockefeller Foundation, to graduates who have had some training in research work in the primary sciences of medicine, or in clinical medicine or surgery, and are likely to profit by a period of work at a university or other chosen centre in the United States before taking up positions for higher teaching or research in the British Isles. In special circumstances the Fellowships may be tenable at centres of research not in America.

The object of the Fellowships in tuberculosis is to give special opportunities for study and research to persons "intending to devote themselves to the advancement by teaching or research of curative or preventive treatment of tuberculosis in all or any of its forms." Candidates must be British subjects and must possess suitable medical, veterinary, or scientific qualifications. It may be possible to award a Senior Fellowship of considerably greater value to a specially well-qualified candidate.

Further particulars are obtainable from the Secretary, Medical Research Council, 38, Old Queen-street, Westminster, London, S.W. 1, with whom applications must be lodged before June 1st.

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[1] H.M. Stationery Office. 1931. Pp. 220. 5s.

light instead of by transillumination. It is admitted that the photographic detail is inferior to that of the celluloid films. However, in a series of 100 cases controlled by independent records and readings on celluloid films no significant lesions were missed through the use of the paper film. Two hundred and fifty films may be exposed and developed in a single roll. By the use of a special viewing device the developed films are read seriatim between two rollers. The cost by this method is only one-third the cost of separate celluloid films. The new roll films are being used also by the Queensboro Tuberculosis Association in a project which requires the X ray examination of 40,000 school-children in the next four years.

NEGRO HEALTH WEEK.

We have just concluded the national Negro Health Week. This is an outgrowth of the "Health Improvement Week" proposed by the late Booker T. Washington in 1915. Washington was the founder of the famous Tuskegee Institute and held that "the future of the negro race depends on the conservation of its health." In 1929 the negro death-rate was 17 per 1000 in contrast to the rate of 11 per 1000 for white Americans. The expectancy of life is ten years less for negro than for white. The Health Week by promoting interest in public health measures seeks to lessen these discrepancies.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

SOME REMARKABLE INFANT WELFARE STATISTICS.

IN a communication to the Academy of Medicine on March 1st Dr. Mourier presented a report on the mortality among infants coming under the care of the public authorities in the Seine area. Before 1921 this mortality ranged from 30 to 40 per cent. It was 36 per cent. in 1920. In 1921 each infant welfare centre was provided with one or more visiting nurses who formed a permanent link between the persons in charge of these infants and the doctor, and who filled in the gaps between his visits at intervals of ten days. Largely in response to this reform the infant mortality fell in 1922 to 16 per cent. It remained about this figure during the next four years. In 1927 the Antony Creche, an annexe to the Hospice-Dépositaire, was linked up to the infant welfare centres in the provinces in such a way that this creche became the centre for the distribution of sterilised cow's milk. Boiled before despatch to the infant welfare centres, this milk has become the babies' sole food since the almost complete disappearance of the wet nurse. This reform was followed by another remarkable fall in the infant mortality, which in 1928 reached 9·42 per cent. In 1931 the figure was down to 5·95 per cent. These results are the more impressive when it is realised that the material under review included the many infants received by the public authorities in a sickly and debilitated state. Statistics including children up to the age of 18 months told the same tale. In this group the mortality fell from 15 per cent. in 1924 to 4·4 per cent. in 1931. The infant mortality from gastro-enteritis has shown a corresponding decline; among an annual roll of about 1200 infants, there were 71 deaths from this cause in 1924, as compared with 7 in 1931. The machinery which has made this wonderful achievement possible deserves study by all interested in infant welfare.

PREPARATIONS FOR CHEMICAL WARFARE.

France in general, and Paris in particular, is thinking this year more than ever in terms of aerial and gas warfare. For more than four years a mixed commission of all the authorities concerned has held meetings at the headquarters of the three national Red Cross societies. The French Red Cross does not confine itself to training nurses for first-aid duties in connexion with gas attacks; it also provides teachers in this field for the boy scouts and girl guides. Another body, the "Association nationale des veuves d'officiers," is organising feminine teams to give first-aid to civilians in case of aerial bombardment. There are already four instruction centres in full activity, one at the prefecture of police, one at the headquarters of the Red Cross, one at the Pasteur Institute, and one at the Musée Social. Throughout March courses in the theory of the subject were given, and they were followed in April by practical training. Several thousand persons have already joined these courses, full attendance on which is followed by the receipt of a certificate and the privilege for the holder thereof to become enrolled, if she so wishes, in the groups put at the service of the authorities for combating aerial and gas warfare. As Madame Rodillon, president of the "Association nationale des veuves d'officiers," has recently stated, it is desirable that in every family there should be one woman qualified to give first-aid and to neutralise the effects of a sudden gas attack. Some idea of the intensity of the work of preparation now going on in Paris against aerial and gas warfare is given by the statement, recently made by the head of the police, that "the work is constant, for it is necessary every day to introduce modifications into the arrangements made."

THE SERVICES

ROYAL ARMY MEDICAL CORPS.

Lt. J. Crealey resigns his commn.

H. T. Chiswell is granted a temp. commn. in the rank of Lt.

ARMY DENTAL CORPS.

The undermentioned Lts. to be Capts.: W. A. McClelland and W. B. Martin.

ROYAL MALTA ARTILLERY.

Surg. Maj. R. Randon retires on retd. pay.

R. L. S. C. G. Casolani to be Surg. Lt.

TERRITORIAL ARMY.

Lt.-Col. C. V. Bulstrode resigns his commn, and retains his rank with permission to wear the prescribed uniform.

Maj. H. Mather resigns his commn. and retains his rank with permission to wear the prescribed uniform.

Capt. J. Broadfoot, having attained the age limit, retires and retains his rank with permission to wear the prescribed uniform.

Capt. P. J. Stokes, from T.A. Res of Off. (R.A.M.C.), to be Capt.

J. G. McDowell to be Lt.

ROYAL AIR FORCE.

Group Capt. H. W. Scott is placed on the retd. list on account of ill-health.

OPHTHALMIC HOSPITALS.—Last year 76 beds, including 14 in the private rooms, were kept in full use at the Royal Westminster Ophthalmic Hospital. There were 1195 in-patients (150 private), and 11,225 new out-patients. The growing requirements of the hospital increased the expenditure by £2000. The school of ophthalmology was well attended.—In 1931 Belfast Ophthalmic Hospital treated 9742 cases, of which 3713 were ear, nose, and throat cases. The expenditure was £1821, a reduction of over £100, and there was a small credit balance. Most of the patients paid a little towards the cost of treatment, and there was a large increase in subscriptions.

The car had two seats for passengers; it was not "constructed or adapted for use" or in any way altered so as to convey goods; but it was in fact being "used for the conveyance of goods or burden." The Cardiff stipendiary magistrate convicted the owner of the car, and the King's Bench Division (Mr. Justice Macnaghten dissenting) has upheld the conviction. The result is that a motorist carrying his own luggage or a surgeon carrying his instruments may technically be guilty of an offence; conversely the owner of a high-powered motor-car may, by claiming to be conveying goods or burden by virtue of fitting a luggage carrier, show some ground for being taxed at a lower rate. The police presumably will exercise discretion in instituting prosecutions while the law remains in this condition. The embarrassment of the situation was not allowed to affect the majority decision last week. The result, observed Mr. Justice Avory, may be far-reaching and may produce what the ordinary public will call an absurdity; but all that this Court has to do is to construe the statute.

A Spiritualist's Libel Action.

The libel action brought against the *Daily Mail* by Mrs. Meurig Morris ended in a verdict which seemed to embody a compromise. Mrs. Morris complained of a contents bill which said "Trance Medium Found Out" and of comments which suggested that her spiritualistic experiences were fraudulent. The defendants pleaded justification and fair comment on a matter of public interest. The verdict was a finding for the defendants on the plea of fair comment, but the jury added that they did not consider that the allegations of fraud or dishonesty had been proved. Mr. Justice McCardie thereupon gave judgment for the defendants but allowed Mrs. Morris to set off against the general costs of the action the costs to which she had been put by the defendants' unsuccessful plea of justification.

Medical evidence, offered in proof of Mrs. Morris's sincerity, described her going into a trance. Before she did so, she was sensitive to the slightest pin-prick; her pulse was 86 and her temperature was normal. She then passed her hands across her face and became pale; her eyes closed; her left hand and the left side of her face became colder than the right; she was insensitive to pin-pricks, and her pulse went up to 130. In the trance state she rose from her chair, spoke in a man's bass voice, seemed to acquire a dominating personality, and held her dress where the lapels of a man's coat would be. Mrs. Morris herself gave evidence of the controls or discarnate spirits which spoke through her. On two occasions during the trial she manifested strong emotion in a dramatic manner. Once, while in the witness-box, she declared that she saw a vision of Christ standing close to her. During the judge's summing-up, she rose, seized the lapels of her coat and said in a deep voice "Thou, who art a brother judge, hearken unto my voice." On each of these occasions Mr. Justice McCardie adjourned the court for a short period until Mrs. Morris recovered her normal calm and the proceedings could continue in a less emotional atmosphere.

Sir Oliver Lodge and other witnesses testified to the plaintiff's honesty; she did not use her gifts to make money. The defendants, on the other hand, while unsuccessful in producing any proof of fraud, attributed to her the power of simulation and pretence; they said that the sermons which she purported to preach contained nothing new; they commented on the happy punctuality with which "Power" and the other controls appeared when required at public meetings; they hinted that something like rehearsals had been overheard before these public performances. Between these two widely different views the trial, long as it was, has not helped the public to decide. Those who already believed in spiritualism and the revelations of mediums will believe in them still. Those who disbelieved will not have been converted. Comparatively little use seems to have been made of the opportunity to inform the court of the symptoms and conditions of hysteria.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

PUBLIC HEALTH REFORM IN NEW YORK STATE.

THE final report of the Special Health Commission of New York State[1] has now been published with a long foreword by Governor Franklin D. Roosevelt. As favourite candidate for the presidential nomination on the Democratic ticket the attitude of Governor Roosevelt to public health is of national interest. In a newspaper interview given on April 6th Governor Roosevelt is even more frank than in his foreword. Our present town and village system of local health administration is, he says, as wasteful of lives as of money. Only the indifference of local government can explain the continuance of diphtheria in some municipalities after it has been stamped out in others. The recommendations of the Commission are described as "a broadly conceived, long range plan . . . practical and easy to follow." Governor Roosevelt then announced that on April 22nd he would call a conference of health leaders to discuss the immediate steps to be taken towards establishment of the new health programme. He concludes: "The expert technical knowledge, the administrative experience in public health, and the sound judgment of the Commission members which has found expression in this report, will, I hope, be translated promptly into law and transmitted by practice into the lives of the people."

THE PAPER ROLL FILM.

The economics of roentgenography are becoming of urgent importance to American physicians. It is agreed that we must be able to diagnose tuberculosis in its childhood stage, and that for this purpose the symptoms and signs upon which our fathers relied are of little account. Most cases in childhood will not even show malnutrition, the family history is regarded as being of small importance, and even the tuberculin test is of limited value. The one and only measure which gives satisfactory insight to the modern clinician is the X ray. But routine X ray examination of thousands of school-children (and literally thousands are concerned, even though the examination be limited to tuberculin-positive cases) becomes a matter of such great expense that even the richer communities of the Eastern states hesitate to avail themselves of the new method. Fluoroscopy has economic advantages, but is unsatisfactory by not revealing sufficient detail. At the Bellevue-Yorkville health centre in New York Dr. Margaret Barnard has been experimenting with paper roll film. The developed paper film which she has used gives an opaque positive which is read by direct

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[1] Public Health in New York State, Albany, N.Y. The State Department of Health. 1932. Pp. 504.

Decree of December, 1930, exempted from this requirement all persons incapacitated for more than ten days, persons receiving unemployment benefit or assistance from the poor laws, or disabled by an industrial accident or in the war, and necessitous persons suffering from tuberculosis or venereal disease.

The Decree of July, 1930, introduced a new principle into the German insurance scheme—that of requiring the insured person to make a direct payment towards the cost of medical treatment. He must now before first seeing his doctor obtain from his society a treatment card (*Behandlungsschein*), for which he pays 50 pfennigs. But the payment is made only once for each illness, and it is not required from the persons mentioned in the preceding paragraph.

By the "treatment card" method, which has been adopted by some of the Austrian and Danish societies as well as in Germany, the insured person makes his payment towards the cost of treatment before the treatment is given. There is, however, another method of prepayment, one by which the insured person purchases books of special stamps from his society, and attaches one or more to the medical certificate he receives from his doctor. This system has been in operation since 1928 in the Swiss Canton of Soloturn, and has brought about a reduction both in the number of cases treated and in the duration of treatment, with a corresponding reduction in cost. The value of the stamp is fixed annually by the society, and the number of stamps attached to the certificate varies with the kind of treatment given; one stamp is required for an ordinary consultation, two stamps for a domiciliary visit, and six for a night visit. The value of the stamps used must not exceed 25 per cent. of the cost of the service rendered.

The stamps system is in operation also in Luxembourg, where the insurance societies are empowered to require the insured persons to pay a share, not exceeding 25 per cent., of the cost of treatment, but, with few exceptions, the societies have applied the requirement only to the dependents of the insured. The price of the stamps varies in the different societies: in one of the largest it has been fixed at two Belgian francs for a consultation and three francs for a domiciliary visit.

POST-TREATMENT METHODS OF PAYMENT.

There are two methods by which the insured person makes his payment after receiving treatment. By one method, which has been adopted by the Canton of Geneva, and by some Austrian societies, the society collects from the insured person the amount payable by him after he has received treatment. In practice considerable difficulty is experienced in collecting the sums due, arrears are common, and it is said that the system can be recommended only when the employer is willing to deduct the required payments from his employee's wages.

Another method is for the insured person to pay the doctor direct, as in private practice, and then recover from his society a certain proportion of the cost. This is the method by which the doctors are remunerated under the French insurance law. The insured person pays his doctor's bill and recovers from his society a sum which varies with the means of the patient from 80 to 85 per cent. of the total sum payable, that sum being calculated not on the actual amount charged or paid, but on a tariff of fees laid down by the society. A similar system is in operation in Norway.

There is evidence that insurance costs have been reduced by requiring the insured persons to make a direct payment towards the cost of treatment, and in Dr. Augustin's view it is the most effective method that has yet been devised to limit expenditure on health insurance. But it cannot be denied that to some extent the method reimposes between doctor and patient the barrier of the fee—a barrier which it was one of the aims of national health insurance to remove, and it may deter the poorer patients from seeking the medical care they may badly need. Cost reductions that have this effect may in the long run prove to be but false and mistaken economies.

References to Regional Medical Officers.

"Some time ago," writes Locum Tenens, "I took temporary charge of a practice containing 2500 panel patients. The doctor had scarcely started when a shower of reference forms began to fall on me at the rate of three and four a day to the number of five and twenty, one being, for a case of double optic atrophy. Records were well kept but in some cases it was difficult for a stranger to identify the particular person; one such I chased over the breadth of a county parish to find that he had been at work for some time. The final result of this expenditure of time and stationery was that one person was declared fit to work and she was a comical old woman who seemed almost unemployable. The doctor had a good laugh when he returned, but it was not very laughable for me."

INSTITUTE OF RAY THERAPY.

DURING its second year of work this Institute in Camden-road, London, has made steady progress; since January of the present year 455 new patients have been seen and over 20,000 treatments given. The number of practitioners referring patients to the Institute has also increased, and there was not a single exception to the rule that no patient is accepted unless provided with a letter from a qualified doctor. The system by which the practitioner is asked to suggest the grade of his patient's fee has worked well. As a result of financial depression many patients would have been unable to afford to pay for their treatments without help from approved societies and business firms. Since the Institute opened in March, 1930, a total of 2985 patients have been seen. Of the 1162 men and women discharged 63·9 per cent. were cured or improved, and 10·4 per cent. showed no improvement. Of the 319 children discharged, 68·4 per cent. were fit or improved, and only 4·1 per cent. showed no improvement. The chief affections treated have been rheumatic conditions, general debility, respiratory and nervous conditions, skin diseases, ear, nose, and throat complaints, and children's complaints. The medical staff incline to the opinion that infra-red rays may prove of value, especially in rheumatic conditions. The nucleus of a medical electricity and diathermy extension has been installed. Training courses in ray therapy are held every two months, and students are not allowed to sit for the diploma until they have worked at least 96 hours in the treatment rooms. The Institute has been recognised by the Society of Apothecaries as a training centre for the biophysical assistants' examination.

PANEL AND CONTRACT PRACTICE

INCREASED COST OF NATIONAL HEALTH INSURANCE.

IN all countries in which a scheme of national health insurance is in operation insurance administrators have during recent years been faced with the problems of increasing expenditure. Although the causes of the increase vary to some extent in different countries, there is one that is prominent in all—namely, an increase in the claims for sickness benefit. In this country attention was directed to the question by the publication two years ago of the Government Actuary's report on his "Examination of the Sickness and Disablement Experience of a Group of Approved Societies in the period 1921–27" (Cmd. 3548), from which it appeared that during that period the claims of men for sickness benefit rose by 41 per cent., those of unmarried women by 60 per cent., and those of married women by 106 per cent., while in all three categories the rise in claims for disablement benefit was considerably higher. In the Government Actuary's report on the "Third Valuation of the Assets and Liabilities of Approved Societies" (Cmd. 3978), published last December, further evidence was given of the seriousness of the position; and Sir Alfred Watson, in his concluding remarks, stated that the claims for sickness and disablement benefits had "risen to a level which in the case of men (regarding the system as a whole) precludes the expectation of any large amount of further surplus from savings in this direction, and, in the case of women, results in a loss of such dimensions as to call imperatively for measures of reconstruction."

German Experience.

The problems of increased cost in the different countries and the measures that have been adopted to deal with them are discussed in an interesting book on the medical aspects of health insurance which has recently been published by a German economist, Dr. Gisela Augustin.[1] In Germany, as in other countries, the cost of sickness claims has increased, and Dr. Augustin attributes it to a variety of causes. Owing to changes in the age and sex constitution of the population since the war the average age of the insured has increased, and there has been an increase in the number of women employed in insurable occupations. The insured persons have more incentives to claim benefit, for unemployment is prevalent and the rate of benefit has tended to rise—some societies before the recent measures of national economy paid a rate of benefit equivalent to 75 per cent. of the basic wage. Moreover, benefit is paid in respect of Sundays and public holidays as well as working days. Health propaganda, which is carried on vigorously in Germany, is said to be another cause of increased claims. The insured person hears so much about health that he becomes "health conscious," and seeks the services of his insurance doctor for the slightest real or imaginary ailment.

MEDICAL CERTIFICATION OF INCAPACITY.

By the insurance societies the increase of sickness claims is attributed largely to the lack of a sense of responsibility in the insurance doctors in giving certificates of incapacity for work. In Germany the payment per attendance system, which has been widely adopted, accentuates the difficulties experienced by doctors in dealing firmly with importunate claimants for benefit. Under this system the insured persons are not attached to particular doctors, as in Britain, but can consult any insurance doctor they prefer at the moment. If refused a certificate by one doctor the patient may go to another. Many claimants for benefit are referred by the societies to their medical referees (*Vertrauensarzte*), and there is a growing volume of opinion in favour of relieving the insurance practitioners of the duty of certification and transferring it entirely to the referees. It is contended that a doctor's business is to treat his patients: that is clinical work and he should stick to it. His attention should not be distracted from the professional work for which he is trained by having administrative duties, such as the issue of incapacity certificates, thrust upon him. Certification should be a matter for the *Vertrauensarzte*.

The medical profession in Germany are, however, against this proposal. It is urged that the decision on the question whether a patient's state of health necessitates his ceasing work is a clinical decision which is made as part of the treatment of the case, and can best be made by the practitioner responsible for the treatment. The practitioner having the patient under observation for treatment purposes is in a better position to decide whether he is or is not incapable of work than a referee, who sees him only once, and can have no first-hand knowledge of his reactions to the varying strains of industrial life. Treatment and certification, the doctors contend, should be in the same hands. In Denmark and Japan there are, it appears, no medical referees; certification is entirely a matter for the practitioner in attendance.

OTHER CAUSES OF INCREASED COST.

Increased sickness claims are not the only factors of the increased cost of health insurance that has been experienced in recent years. The expenditure on medicaments, appliances, institutional and other forms of special treatment has risen, and in countries such as Germany and Austria, where the insured persons are provided with a wide range of medical and ancillary services, expenses so incurred form an important proportion of the total cost. Large sums are spent in institutional treatment and the different forms of electrical treatment; and medicinal baths have attained a widespread and expensive popularity. Various methods for controlling such costs have been adopted, and according to Dr. Augustin the most successful is that of requiring the insured persons to participate in the cost of treatment—to make a small direct payment for the services rendered.

PARTICIPATION OF THE INSURED PERSONS IN THE COST OF TREATMENT.

In Germany the insured person has always been liable to pay part of the cost of the medicines and appliances prescribed for him. Usually his payment was fixed at 10 per cent. of the chemists' charges, but the insurance societies were empowered to raise this proportion to 20 per cent. In practice the requirement was not generally carried into effect, since the chemists refused to collect the small sums payable by the insured. Under the Presidential Decree of July, 1930, the insured person was required to bear the whole cost of a prescription not exceeding 50 pfennigs, and to pay that sum should the medicine prescribed cost more than 50 pfennigs. But the

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[1] Die Arztfrage in der deutschen und ausländischen sozialen Krankenversicherung. Berlin: Richard Schoetz. 1931. Pp. 190. M.10.40.

Decree of December, 19[illegible], exempted from the payment all persons incapacitated from work for long periods, persons receiving unemployment benefit or assistance from the poor laws, or disabled by an industrial accident or in the war, and persons suffering from tuberculosis or venereal disease.

The Decree of July, 19[illegible], introduced a new principle into the German insurance scheme—that of requiring the insured person to make a direct payment towards the cost of medical treatment. He must now before first seeing his doctor obtain from his society a treatment card (*Krankenschein*), for which he pays [illegible] pfennigs. But this payment is [illegible] and it is not required from the persons mentioned in the preceding paragraph.

By this treatment card method, which has been adopted by some of the Austrian and Dutch societies as well as in Germany, the insured person makes his payment towards the cost of treatment before the treatment is given. There are, however, other methods of prepayment, one by which the insured person purchases books of special stamps from his society and gives one or more to the medical attendant [illegible] from his doctor. This system has been in operation [illegible] in the [illegible] of [illegible], and has brought about a reduction both in the number of cases treated and in the duration of treatment, with a corresponding reduction in costs. The value of the stamp is fixed annually by the society, and the number of stamps attached to the [illegible] varies with the kind of treatment given: one stamp is required for an ordinary consultation, [illegible] stamps for a domiciliary visit, and [illegible] for a night visit. The value of the stamps used must not exceed [illegible] per cent. of the cost of the service rendered.

The stamps system is in operation also in Luxemburg, where the insurance societies are empowered to require the insured person to pay a share, not exceeding [illegible] per cent. of the cost of treatment. [illegible] the societies have applied the requirement only to the dependants of the insured. The price of the stamps varies in the different societies; in one of the largest it has been fixed at [illegible] Belgian francs for a consultation and three francs for a domiciliary visit.

B.—[illegible] OF PAYMENT.

There are two methods by which the insured person makes his payment after receiving treatment. By one method, which has been adopted by the Union of Geneva, and by some Austrian societies, the society collects from the insured person the amount payable by him after he has received treatment. In practice considerable difficulty is experienced in collecting the sums due, arrears are common, and it is said that the system can be recommended only when the employer is willing to deduct the required payments from his employee's wages.

Another method is for the insured person to pay the doctor direct, as in private practice, and then recover from his society a certain proportion of the cost. This is the method by which the doctors are remunerated under the French insurance law. The insured person pays his doctor's bill and recovers from his society a sum which varies with the means of the patient from [illegible] to [illegible] per cent. of the total sum payable, that sum being calculated not on the amount charged or paid, but on a tariff of fees laid down by the society. A similar system is in operation in Norway.

There is evidence that insurance costs have been reduced by requiring the insured person to make a direct payment towards the cost of treatment, and in Dr. Engel's view it is the most effective method that has yet been devised to limit expenditure on health insurance. But it cannot be denied that to some extent the method interposes between doctor and patient the barrier of the fee, a barrier which it was one of the aims of national health insurance to remove, and it may deter the poorer patients from seeking the medical care they may badly need. [illegible]

References to Regional Medical Officers.

[illegible] Lorne [illegible] "I took temporary charge of a practice containing [illegible] panel patients. The doctor had recently started [illegible] at the rate of three and four a day to the number of [illegible] being for a case of [illegible]. Records were well kept, but [illegible] for a stranger to identify the [illegible] and that he had been at work [illegible]. The final result of this expenditure of time and energy was that one person was declared fit [illegible]. The doctor had a [illegible] but it was not very helpful for me."

INSTITUTE OF RAY THERAPY.

During the second year of work the Institute of Ray Therapy, Camden Road, London, has made steady progress: since January of the present year [illegible] new patients have been seen and over [illegible] treatments given. The number of practitioners referring patients to the Institute has also increased, and there has not been a single exception to the rule that no patient is accepted unless provided with a letter from a qualified doctor. The system by which the practitioner is asked to suggest the [illegible] of his patient's fee has worked well. As a result of financial depression many patients would have been unable to afford to pay for their treatments without help from approved societies and insurance firms. Since the Institute opened in March, 19[illegible], a total of [illegible] patients have been seen. Of the [illegible] men and women discharged [illegible] per cent. were cured or improved, and [illegible] per cent. showed no improvement. Of the [illegible] children discharged, [illegible] per cent. were fit or improved, and only [illegible] per cent. showed no improvement. The chief affections treated have been rheumatic conditions, general debility, respiratory and nervous conditions, skin diseases, ear, nose, and throat complaints, and children's complaints. The medical staff incline to the opinion that infra-red rays may prove of value, especially in rheumatic conditions. The nucleus of a medical electricity and diathermy [illegible] has been installed. Training courses in ray therapy are held every two months, and students are not allowed to sit for the diploma until they have worked at least [illegible] hours in the treatment rooms. The Institute has been recognized by the Society of Apothecaries as a training centre for the [illegible] physical assistants' examination.

CORRESPONDENCE

THE BALANCE OF DIET AND RENT.

To the Editor of THE LANCET.

SIR,—While I am grateful to Dr. Crowden for his illuminating article in your issue of April 23rd, I feel that I cannot be alone among your readers in being gravely disquieted by his conclusions and suggestions. There is, as he points out, no possible doubt that in a very large proportion of working-class households diet is inadequate and clothing is insufficient because high rents are being paid. No amount of contemplation of his article, however, can rob me of the impression that he regards the figures paid in rent as voluntary commitments of conveniently adjustable dimensions. If we take the four instances which he quotes (omitting for the moment the case of the unemployed man) we find figures for rent ranging from 10*s.* to 13*s.* 6*d.* The family which pays 11*s.* is solvent at the end of the week, but it is also in receipt of a considerably greater income than any of the others. In the present depressed state of industry, weekly wages of under £2 are regrettably common among artisans and labourers. Unfortunately, a rent of 10*s.* to 12*s.* per week is also a regrettably common thing, and it is a matter of extreme difficulty for any working man to find habitable quarters at a less cost for himself, his wife, and a couple of children. Dr. Crowden's unemployed man was in even worse case. Accepting the Board of Trade's scale of percentages, he was faced with the problem of finding, at a day's notice on the loss of his employment, rooms at a rent of five shillings and sixpence, and could not even then hope to supply himself and his family with the necessaries of life on an adequate scale.

It is folly to suppose that such people as these will, of their own desire, try to obtain accommodation in more expensive new houses. It is impossible for them to house themselves at a lower rent. What Dr. Crowden's paper has done is to put anew, and more strongly, the case against the slum landlord with his exorbitant sub-lettings and house-farming. No amount of warning of his victims can save them from what is, at present, their inevitable fate. The consequences of the rent-ramp have been perfectly demonstrated. Cannot the country which is suffering take more active steps than Dr. Crowden advocates?

I am, Sir, yours faithfully,

JOHN D. KERSHAW.

North Western Hospital, Hampstead, N.W.,
April 25th, 1932.

SURGICAL SCARLET FEVER.

To the Editor of THE LANCET.

SIR,—Prof. Okell has in his third Milroy lecture on the Inter-relationships in Streptococcal Disease cleared up what has been to me a source of interest and more or less mystery for over twenty years. During the years 1910–1912, when I was in the Public Health Service of the Manchester Corporation, we admitted to Monsall Hospital children suffering from burns who were said to have developed scarlet fever after being in the wards at Ancoats Hospital for some time. I was never able to make up my mind definitely as to the diagnosis. The chief characteristics were: (1) a well-marked punctate erythema with pyrexia; (2) the almost complete absence of throat symptoms; (3) the "ultra-scarlatinal" tongue, if one may use such an expression—after all these years I can still see the peeled tongue with the papillæ standing out like droplets of dew; (4) the children were not known to have been in contact with any previous case of scarlet fever, nor did they give rise to any secondary causes; (5) they desquamated but never very profusely; (6) none of them ever suffered from a so-called second attack, nor were there any complications, otorrhœa or mastoiditis.

That they were cases of scarlet fever Prof. Okell has, in my opinion, proved conclusively. They were infected through the raw surface of the burn, which was extensive in every instance. Since the infections were not faucial, hæmolytic streptococcus would be absent from the throat; consequently there would be no droplet infection to give rise to secondary cases, and we know, or at least we may believe, in view of recent research, that they need not have been infected from a previous case of scarlet fever. That they did not give rise to others of their class was due to the excellent aseptic practice carried out at Ancoats. If strict asepsis could be assured I see no reason why such cases need be moved to a fever hospital, since we now believe droplet infection to be the chief, if not the only means of spread, and streptococci cannot rise from the surface of a wound.

I have at present under my care in the Borough Infectious Disease Hospital, Northampton, a boy, aged 11 years, who at Christmas received a severe scald on the right leg extending from the knee to the ankle. On March 31st, when the scald was nearly healed, he developed a temperature and rash and was notified as suffering from scarlet fever. Here again there was no history of his having been near a known case of scarlet fever, as he had been away from school and confined to the house. On admission to the isolation hospital on April 1st there was a raw area about one inch by three-eighths in the middle of the thin scar on the outer side of his leg. He had a temperature of 100° F., a well-marked punctate erythema, furred tongue, but practically a normal fauces with no complaint of sore-throat. On April 6th there is a note on the case-sheet, "Tongue typical of scarlet fever. The leg is now healed, and the boy is up with no sign of any complications."

I am, Sir, yours faithfully,

STEPHEN ROWLAND, M.D.,
April 25th, 1932. Medical Officer of Health, Northampton.

TRAINING IN TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—To those specially concerned with the study of pulmonary tuberculosis, and responsible for the teaching of undergraduates and post-graduates, the leading article in your last issue will come as a welcome stimulus. The committee of the Joint Tuberculosis Council has called attention in general terms to one of the main defects in our system of training, but it is doubtful whether the majority of the profession, still less the public at large, are sufficiently aware of the seriousness of this question and of the extent to which it affects the national well-being. The arrangements available in the various schools of the United Kingdom for training medical students in the diagnosis and treatment of pulmonary tuberculosis are for the most part inadequate. There are—and this is the crux of the matter—only four centres, viz., Manchester, Sheffield, Edinburgh, and Glasgow, at which the existing course of teaching in this subject forms a compulsory part of the curriculum for undergraduates. Instruction in other schools may be admirable, but attendance on the courses is voluntary. In centres where no such facilities are offered in the teaching hospital itself, but where ample clinical material and organisation exists in the municipality, there is a lack of adequate coöperation between the medical school and the municipal authorities, nay there is even a feeling on the part of the latter of jealousy of any desire that may be expressed by the University teachers to exploit the existing machinery in the interest of their students. I would go so far as to say that, although in this country there is potentially an abundance of opportunity for the training of the future practitioner in the art of dealing with a disease which kills at least 40,000 of the population every year, yet the vast majority of those who enter general practice, and not a few in the ranks of the consultants, are lamentably incompetent to manage the problem of the phthisical patient, and this through no fault or lack of intelligence, but simply from want of necessary training.

The futility of such a state of affairs is the more apparent when considered in relation to the annual expenditure in the country on the various forms of tuberculosis work. According to the annual reports of the Ministry of Health the total amount of money so spent by the local authorities is over three and a quarter millions a year. Statistics of the after-history and results of sanatorium treatment are discouraging. Even in those at which for the most part only patients of really favourable type are accepted, nearly 40 per cent. of sputum-positive cases are dead at the end of five years, and in less eclectic institutions the results must be worse. Every experienced superintendent makes the complaint that he does not get the most suitable cases, the reason being that the practitioner does not realise the stage of disease at which sanatorium treatment is likely to be of real and lasting benefit. The waste involved in sending to a sanatorium patients who could be better treated in hospital is enormous, yet many cases are so disposed of because the practitioner who first handles them cannot visualise the different types of disease, nor does he grasp the clinical criteria which determine the question of activity or quiescence. Thus it is that a vast amount of public money is yearly thrown away upon our present system of dealing with tuberculous patients, a system which is ineffective from a national point of view, since it does not demand from everyone concerned a fundamental knowledge of elementary clinical principles.

Yet when the plea is advanced for making the study of this disease a compulsory part of the medical student's training, it is met with determined opposition from teachers in our medical schools unwilling to add to the burden of students labouring under an overloaded curriculum. To these I would reply that the *problem* of training in tuberculosis is an integral part of the problem of medical education as a whole, for the reform of which all students and most teachers are clamouring. We need less theory and more practice, less of academic training and more of clinical apprenticeship. Sooner or later the curriculum will have to be radically reformed, and the sooner the better.

I am, Sir, yours faithfully,

MAURICE DAVIDSON, M.D., F.R.C.P.

Wimpole-street, W., April 23rd, 1932.

SCARLET FEVER AND STREPTOCOCCAL INFECTION.

To the Editor of THE LANCET.

SIR,—In his third Milroy lecture which you published last week Prof. Okell says:

> "It is not necessary to marshall the evidence in favour of the belief that scarlet fever is entirely an infection with hæmolytic streptococci. This has been done many times during the past few years and it would be difficult to find any serious flaw in the evidence."

This statement leads me to bring forward a point which has for long seemed to me to have escaped the notice of the bacteriologists with regard to scarlet fever. Surely from the clinical and epidemiological standpoints one of the most characteristic features of this disease is the fact that it confers a long-standing if not *lifelong immunity to reinfection!* Persons who have passed through an attack of scarlet fever may work through virulent epidemics and the chance of reinfection is slight. In this respect scarlet fever differs so essentially from the known streptococcic infections—e.g., erysipelas and impetigo—that it seems to me we ought to hesitate before accepting *as the cause of scarlatina a streptococcus which the* bacteriologists consider to be merely a sub-variety or race of the ordinary pathogenic streptococci.

I am, Sir, yours faithfully,

ARTHUR WHITFIELD.

Harley-street, W., April 25th, 1932.

PSYCHOLOGY AND MEDICINE.

To the Editor of THE LANCET.

SIR,—While I do not dispute with Dr. Brown that individual psychology and psycho-analysis may each appear to have special therapeutic validity on special occasions, and in the use of special physicians, I beg to state that, in the opinion of individual psychologists, the differences between psycho-analysis and individual psychology are not merely technical and those of procedure, or selective applicability, but basal. So far as we see, there are differences in respect of the great problems fundamental to all philosophies and science. Psycho-analysis appears to us realist, in the scholastic sense; individual psychology is certainly conceptualist, if not nominalist. Psycho-analysis seems to admit the validity of the four Aristotelian causes; individual psychology that of the *telos* only. Adler is distinctly a "no-classes" man; Freudians classify and adhere tenaciously to their classes. Adlerians are pragmatic monists; are not Freudians dualists? Individual psychology admits freewill, subjectively, even if acknowledging the objective appearance of determination. What has psycho-analysis to say?

But, most importantly, whilst individual psychology deals with nothing *below* the Plimsoll level of the *complete individual*, the psychosomatic unity—building upwards, synthetically and holistically—psycho-analysis, true to its name, breaks the individual down into something less—a hierarchy of super-ego, ego, id, censor, and what not. No doubt Dr. Brown may suggest that reconciliation of even these differences is not impossible, but we think that such could only be brought about by solution in the absolute relative. Again, Dr. Brown may claim to be already there. In such case, individual psychology, believing to have the last word, would regard his claim as a "fictive ideal." And our differences would remain. But we should still be friends.

I am, Sir, yours faithfully,

F. G. CROOKSHANK.

Wimpole-street, W., April 23rd, 1932.

THE TOLL OF THE ROAD.

To the Editor of THE LANCET.

SIR,—Dr. R. J. Clausen, in your issue of April 16th (p. 854), aptly calls attention to the number of largely preventable injuries and fatalities caused by motor traffic. It is seldom that such disasters now arise from mechanical breakdown in the cars concerned. A large proportion is caused by what Scotland Yard describes as "carelessly crossing the road by pedestrians." At a recent inquest regarding a fatal motor accident the coroner said: "People make a sudden *decision to cross a road, and they take risks which* they would not normally take. Until they can be educated not to take such risks, it is difficult to see how a great number of accidents can be prevented." With an experience of 20 years' almost daily motoring in both town and country one confirms the opinion that by putting into practice one simple rule the pedestrian could obviate a large proportion of accidents. The simple rule is—never attempt to cross a road—ordinary two-way traffic—without first looking to the *left* and then to the *right*. The important reason for looking to the right-hand last is because one always steps first into the line of traffic coming from the right. This rule, after a day or two's practice, becomes automatic habit—it is life-saving.

I am, Sir, yours faithfully,

W. W. SHRUBSHALL.

Burgess Hill, Sussex, April 20th, 1932.

ERGOTISM AND VITAMIN-A DEFICIENCY.

To the Editor of THE LANCET.

SIR,—The similarity between convulsive ergotism and the symptoms of vitamin-A deficiency, noted by Prof. E. Mellanby,[1] reminds us of a chance observation made by us over a year ago, when we were testing the vitamin content of an oil. For this purpose we used young white mice instead of rats, the usual test animals, as a sufficient number of young growing rats was not available. Sixteen mice, 25 to 29 days' old, were kept on the following diet, deficient in fat-soluble vitamin A:

Fat-free casein	18 per cent.
Starch	78 „
McCollum & Simmonds's salt mixture	4 „

brewers' yeast being added, 6 g. for every 100 g. of the mixture.

After three weeks the mice began to show a loss of weight and hair. Three days later one of them developed a dry gangrene of its hind limbs, and within a few days three other mice developed a similar condition. Finally, the gangrenous part of the limbs of all these animals dropped off. Except for this condition and the consequent inconvenience, the animals looked well and took their nourishment like the rest. We suspected ergotism, and tested our supply of starch by microscopical, chemical, and biological methods, as described by R. Kobert,[2] A. W. Blyth,[3] and Dilling and Kelly,[4] with negative results. All the affected mice died about seven weeks from the commencement of the experiment, and the post-mortem examination did not supply any explanation for the gangrene. No growth occurred on the ordinary media inoculated with the blood of these animals. Microscopic sections of different tissues and organs threw no light on the condition. There were no lesions resembling those found in ectromelia, the virus disease of mice, recently described by J. Marchal.[5]

The condition could not be produced again in another batch of mice of the same age, placed under similar conditions, and so could not be studied further. We cannot, therefore, say whether this was another hitherto unknown infection in mice, whose resistance was diminished by vitamin-A deficiency. We shall be glad to hear about similar observations made by any of your readers.

We are, Sir, yours faithfully,

A. S. PARANJPÉ, M.D. Heidelberg, M.B., Ch.B. Edin.,
Professor of Pharmacology and Materia Medica, S.G.S. Medical College, Parel, Bombay.

G. K. GOKHALE, M.B., B.S. Bombay,
Assistant in the Department.

REFERRED PAIN IN VISCERAL DISEASE.

To the Editor of THE LANCET.

SIR,—In your issue of April 16th Mr. John Morley asserts that I use the term viscero-sensory reflex in a sense very different from that given to it by Mackenzie, its originator. According to Mr. Morley, Mackenzie defines his viscero-sensory reflex as superficial pain and hyperalgesia referred to the somatic sensory nerves of the skin and subcutaneous tissue of the abdominal wall resulting from violent stimulation of the afferent nerve-endings in the viscera. But Mackenzie's conception of the viscero-sensory reflex was a very much wider one than that quoted by Mr. Morley.

Referring to Mackenzie's work, "Symptoms and their Interpretation" (3rd ed.), I find on pages 42 and 43 a case of appendicitis described in detail in which Mackenzie found no hyperalgesia of the skin or subcutaneous tissue but a viscero-sensory reflex in the increased sensitiveness of the sensory nerves supplying the muscles over the right iliac fossa and the erector spinæ. On page 65 I find Mackenzie declaring that hyperalgesia of the muscles is far more common than hyperalgesia of the skin; on page 66 is a description of hyperalgesia of extra-peritoneal tissue—mamma, testicle. On pages 68 to 70 Mackenzie mentions hyperalgesia of certain vertebræ in visceral disease. On page 181 Mackenzie mentions the extreme hyperalgesia of the tunica vaginalis in certain cases of renal colic. Obviously the viscero-sensory reflex as Mackenzie conceived it embraced every tissue of the abdominal wall he was able to test and prove, not only skin and subcutaneous tissue as claimed by Mr. Morley.

Mr. Morley says that the complete immobility of the gut described in his work is due to the splanchnic inhibitory reflex which has nothing in common with the mechanism conceived by Mackenzie as the viscero-sensory reflex, but I suggest to Mr. Morley that if stimulation of the abdominal wall elicits a visceral response that phenomenon itself is proof of the existence of a viscero-sensory mechanism, even if it be labelled a splanchnic inhibitory reflex. And if I may repeat the query in my letter published in your issue of April 2nd, how other can the phenomenon of visible peristalsis elicited by pinching up the skin and subcutaneous tissue of the abdominal wall in certain cases of intestinal obstruction be explained than by the existence of a viscero-sensory *reflex*?

I am, Sir, yours faithfully,

St. Leonards-on-Sea, April 22nd, 1932. DAVID LIGAT.

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[1] See THE LANCET, 1931, ii., 918.

[2] Lehrbuch der Intoxikationen, Stuttgart, 1906.

[3] Poisons: their Effects and Detection, London, 1920.

[4] Brit. Med. Jour., 1928, i., 540.

[5] Jour. Path. Bact., 1930, xxxiii., 713.

THE PROBLEMS OF MARRIAGE.

To the Editor of THE LANCET.

SIR,—In view of the proposal of the British Social Hygiene Council to establish a Personal Problems Bureau and the criticism of this proposal in your correspondence columns we should like you to know that at a recent meeting of the North-West London Medical Society a resolution was carried that before attempting any independent means to give effect to the considered opinions of our members, our first efforts should be directed to securing the coöperation and the assistance of established medical organisations. The facts are these :—

1. The British Social Hygiene Council, a lay organisation with certain honorary medical advisers on its board, has published details of a proposed bureau of personal problems. These suggest to our minds that the project is of a questionable nature, judged from what has hitherto been considered as strictly ethical, and the proposed bureau might be regarded as a well thought-out attempt on the part of certain practitioners to secure to themselves by indirect means, including lay press publicity, access to the public for the purpose of securing patients.

2. It has been brought home to us increasingly in recent years that conduct, which in the case of an individual practitioner would almost certainly be regarded as questionable from the ethical point of view, is rarely challenged when similarly practised by groups of practitioners working under the control of lay bodies interested in medical matters.

3. It is in our opinion definitely contrary to the interests of medical practice that this state of affairs should be allowed to continue without an immediate and representative inquiry; and if the results of such inquiry warrant, any such practitioners, without personal malice, should be cited before the General Medical Council as test cases for the purpose of securing definite rulings and guidance on these matters. Finally, we are strongly of opinion that an independent Council of Legal Information should be set up to advise practitioners who contemplate engaging in new forms of medical activity on ethical problems from a strictly *legal* standpoint, as we do not feel that the present facilities for this advice are reliable or sufficient.

We are, Sir, yours faithfully,
For the Committee of the North-West London
Medical Society,
L. M. GREEN,
Hon. Secretary.
GILBERT R. A. ARMSTRONG.
President.
April 12th, 1932.

MYASTHENIA GRAVIS.

To the Editor of THE LANCET.

SIR,—The two following cases may interest "Inquirer," who writes in your issue of April 16th. The first patient was a man of 57 who had very severe symptoms of myasthenia gravis and whose case I described in full in the *British Medical Journal* of Jan. 17th, 1925. To my amazement I find that he is well and hard at work at the present time and that, in fact, the improvement in his health coincides with his taking the juice of six lemons every day. This he tried as a last resort at the end of 1924 when he had been regarded by myself and several other physicians and at least two neurologists as quite hopeless.

The second, and more recent, case is that of a man of 28 in whom the disease developed rather rapidly, so that at the end of two years—i.e., about last November—he was so weak that he was unable to walk and after uttering a few words his voice completely gave out. The usual regurgitation of food was liable to occur owing to paralysis. Here again the case appeared to be desperate, and in the light of my experience of the first patient I suggested his trying these massive doses of lemons. At the same time, however, the patient was put on ephedrine grs. 3 thrice daily so that the cause of his dramatic improvement may be one or the other, or for that matter, neither. Be that as it may, he is now able to drive a car and can talk and eat just like a healthy person.

In a disease of this rarity and subject to remissions, it is impossible to get a sufficient number of cases to investigate scientifically the value of any so-called cure, and in submitting these notes I fully realise their consequent lack of value; nevertheless, when faced with this appalling condition, it is obvious that any treatment which has possibly done good should be tried, provided that it cannot do harm.

I am, Sir, yours faithfully,
A. H. DOUTHWAITE.
Harley-street, W., April 20th, 1932.

THE DURATION OF THE RED LOCHIA.

To the Editor of THE LANCET.

SIR,—In my article of March 12th I was intent on stating a fact, and carefully avoided putting any interpretation on the findings. Your correspondents have made use of the significance of the prolongation of the discharge: Dr. Remington Hobbs to advocate glycerin drainage, and Dr. Morris Johns to allege that such proceedings treat a disease which does not exist. Now, if by red lochia Dr. Hobbs means a bright red vaginal discharge after childbirth, it will be readily agreed that a prolongation after the seventh day, and certainly after the twelfth day, is an indication of a uterine abnormality which demands treatment. On the other hand, in my article it was carefully explained that under the heading of red lochia any red or reddish-brown discharge after childbirth was included, even if the discharge had been temporarily absent during the last few days in hospital, but had reappeared on the patient's resuming household duties. By this standard 86 per cent. of hospital patients—the great majority of whom showed no other sign or symptom of abnormality—had a prolongation of coloured lochia beyond ten days. The use of the term "abnormal" in describing such a large majority of apparently healthy women is surely a perversion of the meaning of the word; it therefore seems unreasonable to institute artificial drainage of the uterus for this one reason alone. It is interesting to read Smellie's account of the lochia:

> ". . . in some patients the red lochia disappears on the 1st or 2nd day: but in others, though rarely, it continues more or less to the end of the month; in one woman it ceases very soon; in another, it flows during the whole month: yet all the patients shall do well."

I am, Sir, yours faithfully,
CHASSAR MOIR.
Obstetric Unit, University College Hospital, April 26th, 1932.

NOVEMBER HANDICAP SWEEPSTAKE.—The official auditors report that the receipts for the Irish sweepstake on the November Handicap were £2,941,851. The cost of administration was £262,000, or nearly 9 per cent., inclusive of £85,837 paid to the promoters. The largest item of expenditure was £103,000 for salaries, wages, and State insurance.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

HOME OFFICE AND INDUSTRIAL DISEASES.

Sir **HERBERT SAMUEL** (Home Secretary), speaking on the Home Office vote, said that his department had always been active in increasing the protection of workers in industry, and within the last year new codes of regulations had been issued dealing with the building trade, sugar factories, and chromium painting. Regulations were continually being elaborated to prevent industrial disease. Within the last few months the Silicosis and Asbestosis Act had been put into operation, the effect of which should greatly increase the safety of workers in those industries. In the factories safety organisations were being promoted, and not far from the House of Commons, in the Horseferry-road, there was an industrial museum which contained large numbers of appliances and devices of various kinds for safeguarding the health and safety of the workers.

SWEEPSTAKES.

Referring to the Irish hospital sweepstakes, Sir H. Samuel said that there had been five of those sweepstakes between November, 1930, and March, 1932, and the public in the United Kingdom and throughout the world had subscribed to those sweepstakes no less than £13,800,000. Of that sum they had received back in prizes £7,700,000. The expenses and commissions of the sweepstakes had cost £3,300,000, and the Irish hospitals had received £2,800,000. So far as Great Britain was concerned a calculation had been made based upon the proportion of the prizes received in this country which were known, and on that basis it might be estimated, though the precise accuracy of the figures could not be guaranteed, that the people of Great Britain had subscribed to the five Irish sweepstakes £9,500,000, and they had received back in prizes £5,000,000. The commissions of sellers of tickets in Great Britain had amounted to £1,600,000, and there had been a sum transferred from Great Britain to Ireland on balance of about £2,750,000. That made them realise how necessary it was that the whole subject should be subjected to a very close examination. (Cheers.) And it was high time that the Royal Commission should be appointed.

PITCH CANCER IN GLAMORGAN.

Mr. **GRENFELL** drew attention to the class of diseases which affected the respiratory organs and which, he said, were very prevalent in his own county of Glamorgan. He asked whether the Home Secretary was satisfied that his medical advisers were treating the problem of silicosis and anthracosis in the proper way. He had been in communication with the Home Secretary on the question of pitch cancer. He was firmly convinced that the incidence of this particular form of cancer among men engaged in certain processes in the Swansea district proved the connexion between the elements of coal gas and the condition of cancer. The cancer starting in the nasal passages became visible after a time, and ultimately grew upon and destroyed the membranes and soft tissue of the upper nasal region and resulted in death. For a long time the question of what was commonly called pitch cancer, epitheliomatous cancer, was inquired into. In the patent fuel industry a large number of men were affected. There were frequent cases of unsightly and painful cancerous growths. By preventive regulation the number of cases had been reduced almost to nil. He asked the Home Secretary to press forward his inquiries into these matters. He suggested that he should institute a kind of pathological survey of the men engaged in these processes where cases had been reported.

THE MEDICAL SIDE: RESEARCH.

Lieut.-Colonel **FREMANTLE** said that the medical side of the Home Secretary's estimates was almost of as great importance to the health of the nation as that of the Ministry of Health. If, however, as had been suggested, the Home Secretary were to undertake an inquiry into the causes of the different industrial diseases a sectional inquiry of that kind would be of very little value, and would lead to much overlapping. For instance, cancer must be taken in relation to the whole consideration of the prevention of that disease. That was a subject which was not rightly dealt with even in the Ministry of Health, because research was primarily in the hands of a body under the Privy Council—the Medical Research Council. That was necessary, because if research was placed in the hands of any one department it was essentially tendentious. That was not the way to arrive at the scientific truth. Research ought to be properly conducted by a body out of the reach of the Government departments. But the Government departments should be very active in stimulating such research and contributing what special factors they could in the circumstances. Such activity might be very valuable now that there had been a suggestion that cancer was attributable to a certain form of gas produced in certain industries, and information should be sent to the right quarter. The work of cancer research was conducted very largely by two particularly centralised bodies—the British Empire Cancer Campaign, and the Imperial Cancer Research Board. The same applied to other industrial diseases. There ought to be proper coördination between the different Government departments which had to deal with the health of the people. There had been an enormous amount of wasted energy both in administration and in inquiry of various kinds, and a great deal of overlapping. Medical men considered that physical questions, like housing and actual physical illness, had a great deal to do with the causation of crime. The health organisation of the country was very valuable in that connexion. At the same time, medical men were laying more and more stress upon the mental side of health, and in connexion with health they recognised that it was much more important than the physical side, although the physical side must not be neglected. They had to take into account the increasing physical and mental dangers at the present time. The rush and hurry, the stress and noise as a result of modern inventions, and the acceleration of communications, were largely responsible for a great deal of the mental illness, and indirectly, therefore, were tending towards mental crime. He hoped that the attention which was being paid to these matters in connexion with the Mental Treatment Act, and mental treatment generally, would reflect itself sooner or later in the possibility of preventing crime at a very early age or diminishing the modern conditions tending in the same direction.

Government Reply.

Mr. **OLIVER STANLEY** (Under Secretary for Home Affairs), replying to the debate, said he agreed that the position in regard to miners' nystagmus was not one which could give them any satisfaction. The Home Office were giving further consideration to that terrible disease, and further investigation was being pursued in regard to it. As regarded the rather worrying type of cancer referred to by Mr. Grenfell, the Home Office had been making inquiries and it was certainly unfortunately true that those inquiries had revealed an unexpected existence of cancer among persons employed at works in the hon. Member's district. The inquiries had thrown no real light on the question as to how the disease was caused, nor had they established any connexion between that disease and the occupation of the people suffering from it. The employers were much disturbed by the discoveries, and they had engaged the services of an eminent pathologist to carry out further investigations.

EDUCATIONAL HEALTH SERVICES.

The House of Commons on April 18th went into Committee of Supply on a vote of £26,892,676 for the Salaries and Expenses of the Board of Education. Captain BOURNE, Deputy-Chairman of Committees, was in the chair.

THE PRESIDENT'S STATEMENT.

Introducing the vote, Sir D. MACLEAN, President of the Board of Education, said that there was one item on which local authorities were proposing some increase of expenditure—namely, health services. He did not suppose anybody would be inclined to criticise their action, because he thought that the value of the work of the School Medical Service was nowhere disputed. Health was a fundamental essential of a good education and of national well-being. He had no doubt that children who were leaving school to-day were healthier and fitter than those who left 20 years ago. On the other hand, it must be recognised that complaints were made of the physique of many young men by employers. He understood that the Army authorities were concerned at the physical condition of recruits. These complaints undoubtedly pointed to what was a very serious national problem—namely, the risk of physical deterioration during adolescence after leaving school. That was a problem which is beyond the control of the school authorities. Its gravity was not so widely appreciated as it should be, though workers amongst the adolescent were fully alive to it, and a warm tribute should be paid to the voluntary efforts which were being made to tackle it through boys' and girls' clubs, boy scouts, girl guides, and the many other similar activities.

In connexion with this problem of the health of the adolescent, he would draw particular attention to the recommendations in regard to education which were contained in the recent report of the Royal Commission on Licensing. The Commission, though composed of persons of the most divergent standpoints, were unanimous in emphasising the importance which they attached to suitable instruction in regard to alcohol in the schools of the country. Their unanimity on such a point was a remarkable fact which added greatly to the importance of the recommendations. They would, he was sure, receive the closest consideration of all concerned. Amongst other things the Commission fully endorsed the view that the instruction should form part of the general course of instruction in health. In furtherance of this view he was taking steps to have the Board's syllabus on "The Hygiene of Food and Drink" and also their volume of "Suggestions for Health Education" combined into a single pamphlet.

One other matter affecting health might be of interest to Members who often put questions on the subject of the use of milk in schools. Recent experiments had emphasised the very great value of milk as an addition to children's diet. It was therefore gratifying to note that about 800,000 children were now receiving a daily ration of milk for which they paid 1d., as compared with 350,000 two years ago; the activities of the National Milk Publicity Council were mainly responsible for this satisfactory increase. In addition, local education authorities provided free milk to 120,000 children whose parents could not afford to pay for it. So that in the aggregate nearly 1,000,000 children in the elementary schools were receiving at least a glass of milk a day.

PLAYING FIELDS.

Mr. MORGAN JONES said he was very much interested, as many others were, in the very influential campaign conducted in the last four or five years for providing national playing fields. It was odd that many schools in the heart of the country had less playground accommodation than many schools in thickly populated urban areas. That was a state of affairs which must receive attention, and he hoped that the Board of Education would keep its eye upon the point. The sanitary accommodation of schools also required to be looked into.

Mr. MCENTEE said that children in the special schools and in the schools for physically and mentally defective children were all suffering because the education committees in their areas had not taken advantage of opportunities offered to them. He was sure that there were plenty of sources of revenue still to be tapped without tapping the source of education and inflicting an injustice on children for the remainder of their lives. The present Government would go down to history as the Government who had robbed the children of their childhood.

TEACHERS AND DOCTORS: DANGER OF MASS NEUROSIS.

Dr. O'DONOVAN said that he hoped the time would come when the teaching profession would be as conscious not only of its responsibilities but of its powers as the medical profession. No one kicked harder than doctors at orders from Whitehall, and if only teachers were inoculated with this mulish virus it would be better for education. They could not undertake a review of the educational services without paying a tribute to the great work of the school medical officers and the efficient work of school nurses. But those were dreadful dead ends of professional life, and unless more openings were made by which the keener members of those services could rise to better positions they would cease to attract the best of their nurses and the best of their doctors. The best doctors and nurses, though content with their pay, desired bigger fields for their energies and abilities than the school medical service afforded. They should not take pride either in the magnitude of their school clinics or in the number of their school doctors; they represented the extent of their failure in the home. If they needed many more nurses to see that the children were free from ringworm and parasites and minor disorders it was evidence of a deficiency in the home work. It would tend to make much of our school medical services unnecessary if mothers had the instincts of the race and had better homes in which to bring up their children. It would not be altogether lamentable if a reduction of the grants from Whitehall led to a greater independence on the part of local authorities. If there was anything that was going to destroy modern civilisation it was not Capitalism, Socialism, or human perversity, but a general mass neurosis. If they watched carefully the writings of the medical profession they would gather that doctors feared a development of mass neurosis more than they feared the growth of cancer or consumption. If they looked at the school records and the records of school teachers they would find that nervous maladies predominated and reached a greater figure than in almost any other human occupation. If the teachers developed neurosis the pupils were bound to contract it. A study of the lower tone of the children in our elementary schools was most urgently called for.

INFLUENCE OF HOME CONDITIONS.

Lieut.-Colonel FREMANTLE said that Dr. O'Donovan had emphasised the point that the medical profession were not simply looking after the health of the children but that the education of the spirit had been the guiding line for the individual, while the body was merely the machine through which the spirit was able to take effect. They wanted education in the wider sense. They were responsible for the education of the body and the mind and they wanted to educate children in such a way as would lead to the development of the right spirit. As an old medical officer of health he (Colonel Fremantle) was particularly concerned with the health side of education, both mental and preventive. There were two sets of people engaged in education who were responsible for the preventive side—the teacher and the parent. Everything they could do to interest these two sets of people had been done. But what was most important was the development of family health. In his view the school and the home were too much divorced. The mental side was liable to be forgotten in considering the health of school-children. It was useless for one Government department to be considering its own side of the problem. All the different sides should be considered. The school for mentally defective children had to be associated with the mental hospitals and the work of mental treatment under the Board of Control. The work of the Ministry of Health and the Home Office also came in as well. They had to look into the causes of the growing neurosis in the population which had been referred to in that debate. The birth-rate had been brought down to a very small figure, the death-rate was reduced to a minimum, and the infant mortality-rate was down perhaps to the lowest point, but they had to deal with a generation previously afflicted with nervous maladies. One of the chief causes was the appetite of the children for an unnatural amount of movement and activity. A great deal of it was natural, and it was difficult to know where to stop. They had to give the children themselves the seeds of a love of quiet which might afterwards be a valuable influence in trying to resist the tendencies which made for neurotic troubles. He could see no signs of the health side of education being in any way deteriorated by the present economies.

Progress was reported.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 20TH.

Adulteration of Milk.

Brigadier-General CLIFTON BROWN asked the Minister of Health whether he had yet consulted with the Ministry of Agriculture on the Adulteration of Milk Act; and whether he proposed to make any alterations or amend the Act so as to make the law more equitable than at present.—Sir E. HILTON YOUNG replied: This matter has been discussed with my right hon. friend, the Minister of Agriculture, but the consideration of any proposals for legislation relating to the composition of milk must be postponed pending the recommendations of the Milk Reorganisation Commission.

THURSDAY, APRIL 21ST.

Factory Inspectors' Report.

Mr. RHYS DAVIES asked the Home Secretary whether he would expedite the publication of the Factory Inspectors' Report for 1931, so that it might be available for the purposes of consideration and debate before the House rose in July.—Sir HERBERT SAMUEL replied: I will endeavour to expedite the issue of this report.

Education of Deaf Children.

Sir WILLIAM JENKINS asked the President of the Board of Education the number of deaf children in England and Wales; the compulsory age of attendance at school; what accommodation was available; and what was the cost per pupil for training.—Sir DONALD MACLEAN replied: On Dec. 31st, 1930, the latest date for which figures are available, the number of children, in England and Wales, ascertained by school medical officers to be deaf was returned as 3621, of whom 1915 were boys and 1706 were girls. On the same date there were returned as partially deaf 1882, of whom 973 were boys and 909 were girls. The period of compulsory education for deaf children is from the age of 7 to that of 16. Special schools for the totally deaf provide accommodation for 4386 children, and in addition there are 222 places in schools certified for the partially deaf. It is estimated that the average cost of the education of deaf children is approximately £39 per child per annum in the day schools, and £72 in residential schools.

Mr. T. WILLIAMS: If these children have to remain for two years longer than ordinary elementary school boys and girls, is there any organisation to provide available opportunities for them when they are ready for work?

Viscountess ASTOR: Would the right hon. gentleman consider having compulsory education for deaf children a little earlier? It is found in Plymouth that if you get these children at school a little earlier it is far more advantageous.

Sir D. MACLEAN: With regard to the question put by Mr. Williams that matter is engaging the attention of the Board and the organisation of the Board takes a special interest in the matter. The question raised by Viscountess Astor would require additional legislation, and it is a very open question whether the parents of those unfortunate children would be willing to send them to school at an earlier age. At the moment I am not prepared to give any other answer to the question.

Mr. T. WILLIAMS: Seeing that accommodation is available for less than 50 per cent. of those children who are defective, will the right hon. gentleman require local authorities to provide accommodation for the remainder?

Sir D. MACLEAN: Not at present.

Mr. MCKEAG: Is the right hon. gentleman aware that purely mentally defective children are very often mixed up with deaf children at schools for the deaf, and that, if that were not the case, much more accommodation would be available for those who are merely deaf?

Sir D. MACLEAN: I will inquire into that point.

Mentally Defective Children.

Sir WILLIAM JENKINS asked the President of the Board of Education the number of mentally defective children in England and Wales, giving separate figures for boys and girls; what accommodation was available for their education and training, and where the institutions were situated; and what was the average cost per pupil for training.—Sir DONALD MACLEAN replied: On Dec. 31st, 1930, the latest date for which complete figures are available, the number of educable mentally defective children of school age, ascertained by school medical officers in England and Wales, was returned as about 32,100: 18,700 boys and 13,400 girls. It is known, however, that the actual number of such children is considerably larger. There is accommodation in special schools for about 16,600 children of this type, and I am sending the hon. Member a copy of the Board's List 42, which shows where the schools are situated. The average cost of education in these schools is about £23 per child, per annum, in day schools, and £67 in residential schools.

Blind Persons' Pensions.

Mr. HUTCHISON asked the Secretary to the Treasury how many blind persons were now receiving a pension under the Blind Persons Pensions Act; and how this total compared with the number of blind persons in the country.—Major ELLIOT (Financial Secretary to the Treasury) replied: The number of persons in receipt of pensions under the Blind Persons Act, 1920, on Dec. 31st, 1931, the latest date for which figures are available, was 24,387. According to the latest returns received from the local authorities, the number of registered blind persons in England and Wales was 52,727 on March 31st, 1929. Returns are now being obtained from local authorities of the number of registered blind persons in their areas on March 31st last. According to unofficial figures obtained from the Counties' Associations for the Blind there were 60,598 registered blind persons in England and Wales on March 31st, 1931. The number of registered blind persons in Scotland on March 31st, 1931, was 8621.

Mr. MAGNAY asked the Minister of Health whether his attention had been called to the recent increase in the numbers of registered blind persons in England and Wales; and whether he could state the reasons for this increase.—Mr. ERNEST BROWN replied: Yes, Sir. There has been a continuous increase in these numbers, but my right hon. friend is advised that this is probably due to more complete registration and does not necessarily indicate any actual increase in the number of blind persons. Many persons who have been blind for some time, but were previously unaware of the services provided under the Blind Persons Act, have been led to seek registration in order to obtain the benefits available under that Act.

MONDAY, APRIL 25TH.

Indian Medical Council Bill.

Mr. MORGAN JONES asked the Secretary of State for India the present position in respect of the Indian Medical Council Bill recently brought before the Indian legislative council by the Government of India.—Sir S. HOARE replied: The Bill was introduced in the Indian Legislative Assembly on March 23rd. I have not yet heard whether it has made any further progress.

Relief of Victims of Chinese Floods.

Mr. RHYS DAVIES asked the Secretary for Foreign Affairs whether he could give the House any further information regarding the relief work for the victims of the Yangtse flood; and what was the present attitude of His Majesty's Government in this matter.—Sir J. SIMON replied: In September, 1931, the Assembly of the League of Nations adopted two resolutions in regard to the floods in China, and the Council of the League instructed the secretariat to communicate copies to all the Governments. In response to this appeal many contributions were made directly to China, and in addition the following were notified to the League: Contributions in money were made by the Belgian and United States Red Cross, the Red Crescent Society of Turkey, and the Swedish Red Cross. Contributions of medicines, &c., were made by the University of Toronto, the State Serum Institute of Denmark, the Pasteur Institute of Saigon, and the Governments of Egypt, Indo-China, India, the Netherlands, the Netherlands East Indies, Norway, Poland, Spain, Sweden, and Yugoslavia. Contributions of medical personnel were made by the Governments of Egypt, the United States, Indo-China, the Netherlands East Indies, and Spain. In addition to these, contributions of various kinds were made by private organisations and individuals in several countries, including a monetary contribution from the Society of Friends in England. When the laboratory resources of China were organised in view of the need for vaccines and sera, all needed supplies were produced without difficulty, so that the health authorities found it unnecessary to accept many offers of this kind. Among contributions actually sent was one of anti-plague vaccine from the Government of India. The medical director of the health section of the League arrived at Nanking in September, and placed himself at the disposal of the Chinese Government and the Flood Relief Commission. He remained in China till late in December. Prof. Cinca and Drs. B. Borcic, C. L. Park, A. Stampar, and T. F. Huang, all of the League Health organisation, made a survey, gave advice, and organised anti-epidemic campaigns. All these activities were coördinated by Sir J. Hope Simpson, who at the request of H.M. Government placed his services at the disposal of the Chinese Government, and was appointed to be head of the National Flood Relief Commission.

TUESDAY, APRIL 26TH.

Birth Control Conference.

Mr. POTTER asked the Minister of Health if his sanction had been sought for medical officers of health and their staffs to attend the conference of the National Birth Control Association to be held in London in the near future.—Mr. ERNEST BROWN: My right hon. friend has received and has under consideration an application from one local authority in respect of one of their medical officers.

Cost of Maintenance in Mental Hospitals.

Mr. GORDON MACDONALD asked the Minister of Health the average weekly cost of maintenance of a patient in the county mental hospitals in Lancashire.—Sir E. HILTON YOUNG replied: For the year ended on March 31st, 1931, the average weekly cost of maintenance of a patient in the county mental hospitals in Lancashire was approximately 19*s.* 5*d.*

Cost of Maintenance in Poor-law Institutions.

Mr. GORDON MACDONALD asked the Minister of Health the average weekly cost for the maintenance of an inmate in a public assistance institution in Lancashire.—Sir E. HILTON YOUNG replied: The average weekly cost per inmate, including loan charges, but excluding capital expenditure defrayed from revenue, was, during the year 1930–1931, 21*s.* 6*d.* This cost relates to poor-law institutions only, and not to poor-law hospitals or children's homes.

MEDICAL NEWS

University of London.

At recent examinations the following candidates were successful:—

D.P.M.

With Special Knowledge of Psychiatry.—J. L. Clegg and D. C. Dewar.

A Course on Diseases of the Kidney.

A post-graduate course on Diseases of the Kidney will be held at the Clinique Thérapeutique Médicale de la Pitié, Paris, from May 31st to June 11th, under the direction of Prof. F. Rathery. Particulars may be had from the Secretariat of the Faculty of Medicine of the University of Paris.

Aberdeen University Club, London.

The eighty-seventh half-yearly dinner of this club will be held at the Trocadero Restaurant, at 7 for 7.30 P.M., on Thursday, May 19th, with Sir Arthur Keith, F.R.S., Rector of the University, in the chair. The secretary's address is 9, Addison-gardens, W.14.

Lebanon Hospital for Mental Diseases.

The thirty-third annual meeting of this hospital will be held at Friends House, Euston-road, London, N.W., at 3 P.M. on Wednesday, May 4th. Dr. E. W. G. Masterman, chairman of the hospital, will preside, and the speakers will include Dr. Nathan Raw and Dr. Doris Odlum. The secretary's office is at 55, Wellington-road, N.W. 8.

Demonstrations of Contraceptive Technique.

The Society for Constructive Birth Control and Racial Progress informs us that at 2.30 P.M. on Wednesday, May 4th, demonstrations of contraçeptive technique will be given to practitioners and senior medical students. Application for tickets should be made to the hon. secretary of the society at 108, Whitfield-street, London, W.1.

Society of Chemical Industry.

At the annual meeting of the London section of this society, to be held at Burlington House, Piccadilly, W., at 8 P.M. on Monday, May 2nd, there will be a discussion on Smoke Abatement in Industry.

Royal Sanitary Institute.

Lord Leconfield, Lord-Lieutenant of Sussex, will preside at the forty-third congress of this institute, to be held at Brighton from July 9th to 16th. The preliminary programme, obtainable from the secretary at 90, Buckingham Palace-road, London, S.W. 1, shows that the many subjects of discussion will include the work of local authorities relative to cancer; the prevention of measles mortality; vaccination; birth control; visual fatigue in industry; the medical treatment of the sick poor; mental hygiene; the Town and Country Planning Bill; "slum ending *versus* slum mending"; and the training of nurses, with special reference to the public health services.

Manchester Medical Society.

The annual meeting of this society will be held at 8 P.M. on Wednesday, May 4th. Dr. Garfield Williams, the Dean of Manchester, will give an address on Certain Aspects of Health and Education, with Special Reference to Conditions in Africa and the East.

The Bayliss-Starling Memorial Scholarship.

This scholarship, founded by old students, friends, and admirers, in commemoration of Sir William Bayliss and Prof. E. H. Starling, has an annual value of about £120, with exemption from tuition fees, and is tenable at University College, London. The scholar will be required to follow a course of study approved by the Jodrell professor of physiology, involving a training in the principles of, and methods of research in, physiology and/or biochemistry. Applications must be sent to the Secretary of University College not later than May 14th.

Memorial to Dr. Walter Stevenson.

On April 22nd at Dr. Steevens' Hospital, Dublin, Prof. John Joly, F.R.S., unveiled a memorial tablet erected by his colleagues to the memory of the late Dr. Walter Clegg Stevenson, for many years one of the surgeons to the Hospital. Dr. Stevenson, who died a little over a year ago at the age of 54, was a pioneer in the field of radium therapy, and was responsible, with Prof. Joly, for the method of introducing radon to the tissues contained in hollow needles. The tablet recalls not only his scientific work, but the deep affection felt for Dr. Stevenson by his colleagues.

Donations and Bequests.

The late Mrs. Jane Eadith Catherine Caulfeild's bequests include £2500 for providing a nurse for Froxfield, Hants; £1000 to the British Home and Hospital for Incurables, Streatham; £500 each to the Devonshire Hospital and Buxton Bath Charity, the Petersfield Cottage Hospital, the Royal Institution for Deaf and Dumb, Derby, the Samaritan Free Hospital for Women, the Royal Blind Pension Society; £250 each to St. Mary's Home for Poor Children, Broadstairs; the St. Mary's Hospital for Women and Children, Plaistow; the Hospital for Consumption and Diseases of the Chest; the East London Hospital for Children and Dispensary for Women; the Royal Hants County Hospital; the Royal Sea Bathing Hospital, Margate; and the Lord Mayor Treloar's Cripples' Hospital and College, Alton.—The late Colonel Warden Robertson Maxwell left among other bequests, £4000 to the Royal Hospital for Sick Children, Glasgow; £1000 each to the Glasgow Royal Cancer Hospital, Glasgow Royal Hospital, Glasgow Western Hospital, and Glasgow Victoria Infirmary.—Mr. and Mrs. Charles Phibbs, of Llanbedr, Merionethshire, have given £2000 to endow two beds for Merionethshire Voluntary Orthopædic Association patients in the Shropshire Orthopædic Hospital.

Students' Carnival Beds.

Last week the Lord Mayor of Birmingham unveiled at the Queen's Hospital two beds which have been endowed with the proceeds of the Birmingham students' carnival last year. Sixteen beds have now been endowed from this source.

Royal National Orthopædic Hospital.

At the annual meeting last week it was reported that in 1931 income on general account exceeded expenditure by over £5000; on that account £72,000 had been collected in addition to donations amounting to £9000 in reduction of the building debt. Both in-patients and out-patients exceeded all previous numbers. Clinics are being established in coöperation with local authorities where patients can be examined and out-patient treatment given throughout London and the home counties and even in Wales. Evening clinics are also being established in Gt. Portland-street for patients who are unable to attend the hospital during ordinary hours.

National Association for the Prevention of Tuberculosis.

This association will hold its eighteenth annual meeting in London—in the Great Hall of University College, Gordon-street, W.C.—from July 21st to 23rd. After the opening by Sir Hilton Young, the Minister of Health, the first day will be devoted to addresses on the Influence of the Discovery of the Tubercle Bacillus on Medicine (Dr. R. A. Young), Surgery (Sir Henry Gauvain), and Public Health (Dr. W. C. White, of Washington, D.C.). Later Dr. F. J. H. Coutts will open a discussion on the Protection from Tuberculosis of the Young Adult. On the second day the subject before the conference will be the Need for Continuity of Care in Tuberculosis, the principal speakers being Miss Edith McGaw and Dr. Septimus Walker, hon. secretary and tuberculosis officer respectively of the Paddington Tuberculosis Dispensary. The third day, Saturday, will be devoted to visits to Queen Mary's Hospital for Children, Carshalton, and the National Institute for Research in Dairying, Reading.

County Hospital Accommodation in Durham.

Dr. Charles Franks, medical officer of health for the county of Durham, has submitted to the county council a scheme for the reorganisation of hospital accommodation. It is recommended that the number of isolation hospitals should be reduced from 28 to 12 where, in each instance, there is ample room for extension. Dr. Franks points out that with the present accommodation of 700 beds the total number of patients admitted during 1930 was 3213 which, assuming the average stay of each patient to be 30 days, means that of the 365 days of the year the beds were only occupied on 138 days, or that the hospital accommodation was only used for approximately five months of the year. In the scheme of reorganisation the number of beds would be reduced from 700 to 582. These beds, based on the figures of last year, would still leave a sufficiently large margin to deal with any moderate epidemic. He also proposes to reduce the existing number of ten small-pox hospitals to three, which would decrease the number of beds available from 212 to 83. The scheme admittedly may require revision in view of a newly proposed readjustment of the boundaries of county areas. Meanwhile, some of the local authorities are opposing it.

Fellowship of Medicine and Post-Graduate Medical Association.

An afternoon course in diseases of the skin will be held at St. John's Hospital, Leicester-square, London, from May 2nd to 28th. An evening course in physical medicine will be given at the London Light and Electrical Clinic, Ranelagh-road, from 8 to 9 P.M., on Mondays and Wednesdays from May 2nd to 25th. A week-end course in clinical surgery, consisting of demonstrations on cases, is to be held at the Royal Albert Dock Hospital on Saturday and Sunday, May 7th and 8th, from 9.30 A.M. to 6.15 P.M. daily. This course is specially suitable for candidates for the F.R.C.S., but is also intended for general practitioners. A lecture-demonstration on Rheumatic Infection and Heart Disease in Children will be given from 10.30 A.M. to 12 noon by Dr. Bernard Schlesinger at the Children's Heart Hospital, West Wickham, on Saturday, May 7th. (Application for this should be made to the Fellowship not later than May 3rd.) A course of three epidiascope and laboratory demonstrations will be given by Dr. Knyvett Gordon at 10, Bedford-square, at 8.30 on Wednesdays, May 18th, 25th, and June 1st. Though not restricted to candidates for the M.R.C.P., these demonstrations are intended to be useful to them. Further particulars of all courses may be had from the secretary of the Fellowship, 1, Wimpole-street, W. 1.

Optical Society.

This society has decided to amalgamate with the Physical Society of London, and steps are being taken accordingly.

Contributory Schemes.

Last year the contributory scheme of the Radcliffe Infirmary, Oxford, produced £36,778, the largest sum yet received, an increase of £2000. Of the 4752 in-patients 61 per cent., and of the 10,694 out-patients 71 per cent., were members of the scheme.—The workmen's hospital fund of the Royal Gwent Hospital, Newport (Mon), last year amounted to £12,400, out of a total income of £28,000. There was a small surplus.—The industrial situation was responsible for a fall of £1183 in workmen's contributions to the Palmer Memorial Home at Jarrow.—The contributory scheme of the Royal Buckinghamshire Hospital, Aylesbury, has shown continuous increases from £2954 in 1926 to £4456 last year, when the total expenditure of the institution was £11,904.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 16TH, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 87 (last week 73); scarlet fever, 1512; diphtheria, 716; enteric fever, 20; acute pneumonia (primary or influenzal), 1036; puerperal fever, 37; polio-myelitis, 113; cerebro-spinal fever, 78; acute poliomyelitis, 10; encephalitis lethargica, 11; continued fever, 1; dysentery, 31; ophthalmia neonatorum, 97. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 19th–20th was as follows: Small-pox, 122 under treatment, 1 under observation (last week 117 and 6 respectively); scarlet fever, 1406; diphtheria, 1369; enteric fever, 11; measles, 2696; whooping-cough, 423; puerperal fever, 25 (plus 14 babies); encephalitis lethargica, 226; poliomyelitis, 5; "other diseases," 112. At St. Margaret's Hospital there were 13 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was 1 death from small-pox, 1 (1) from enteric fever, 132 (61) from measles, 9 (1) from scarlet fever, 42 (6) from whooping-cough, 29 (4) from diphtheria, 57 (16) from diarrhœa and enteritis under two years, and 85 (16) from influenza. The figures in parentheses are those for London itself.

The fatal case provisionally classified to small-pox occurred in Camberwell Metropolitan Borough. No great town reported more than 3 deaths from influenza. Liverpool reported 16 deaths from measles, Leeds 7, Manchester 5. Whooping-cough accounted for 8 deaths at Liverpool, 5 at Birmingham.

The number of stillbirths notified during the week was 276 (corresponding to a rate of 38 per 1000 births), including 42 in London.

FATAL CASE OF SMALL-POX.—This case which occurred in Camberwell was, Dr. H. W. Barnes tells us, that of a woman, aged 79 years, whose death on April 10th was certificated as due to (1a) cardiac failure, (b) senility, (c) variola. There was no post-mortem examination.

Appointments

BAILEY, H., F.R.C.S. Eng., has been appointed Consulting Surgeon, Essex County Council.

Certifying Surgeons under the Factory [illegible]
COCK, G., L.R.C.P. Lond., M.R.C.S [illegible]
HUMBLE, J. W. M., M.B., Ch.B. G [illegible]
KINGDON, M. C. H., L.R.C.P. Lond., [illegible]
Devon); STRACHAN, F. J., M.B., B. [illegible]
WORTHINGTON, C. L., M.B., B.S. Lond. (Leamington, Warwick).

OBITUARY

SIR WILLIAM WATSON CHEYNE, F.R.C.S., F.R.S.,

LATE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

WE announced last week the death of Sir Watson Cheyne, which occurred on Tuesday, April 19th, in his eightieth year.

William Watson Cheyne was born in 1852, the son of a Scottish clergyman, Andrew Cheyne, of Fetlar, Shetland. He was educated at the University of Edinburgh and graduated in the medical school with first class honours as M.B., C.M. in 1875. He was a distinguished student, securing various prizes, and after graduation pursued his studies in Vienna and at the University of Strasbourg. He marked himself out, even in student days, for Lister's devoted follower, as the following passage quoted from the first Lister Memorial Lecture, which was delivered by Cheyne before the Royal College of Surgeons of England in 1925, shows vividly. He said:

WATSON CHEYNE.

[*Photograph by Elliott & Fry.*

> "I shall never forget the first day that I went to the hospital (Royal Infirmary, Edinburgh). At 12 o'clock I . . . found crowds of students hurrying along the lobbies, a good many, indeed, running. I joined the company, full of curiosity, and found that we were going to Lister's clinical lecture. We ultimately reached the large operating theatre and found it filled with men crowding the gallery and standing at the back and in the gangways: there must have been over 200 there, and they were senior men, for the clinical surgery class was not usually attended till the fourth year. I should think that I was the only one of my year there. Presently a man walked into the arena, sat down in a chair placed on the floor of the theatre; crossing his legs and putting his right hand on his thigh, he began his lecture. This man was Lister. He had not spoken many minutes before I became fascinated with the subject and could not help seeing the wonderful era that was dawning for surgery. I had my notebooks for my other classes in my hand and I started to take down what he said, and, as he spoke very slowly and clearly and I scribbled very quickly, I was able to take down practically the whole lecture, though, not having learnt any surgery, I did not understand it at all clearly at first. But what a contrast with the lectures on systematic surgery ! . . . Is it any wonder that I left the theatre an enthusiast for the profession that I had chosen, and that on lecture days I was one of those who ran."

On his return from the continent Cheyne became Lister's house surgeon and right-hand man in the development of antiseptic surgery nearly from its birth. In 1877 he was elected to the Syme Surgical Fellowship, and became demonstrator of anatomy in the University of Edinburgh. But in that year Lister was invited to join the staff of King's College Hospital, with a chair in surgery at the institution specially created for him. This was the official recognition in London of the fundamental value of Lister's discoveries, and it was not forthcoming without opposition, sometimes of a vexatious sort. Lister, however, was able to make a stipulation which showed the unusual nature of the appointment, and was allowed to bring with him from Edinburgh four men as his assistants, who had been thoroughly trained in the new methods: of these the principal was Watson Cheyne, who now became his house surgeon, the others being John Stewart, senior assistant, and W. H. Dobie and James Altham, dressers, the last two being still unqualified. The story of the early stages of Lister's work at King's College makes painful reading, and Cheyne, at first, shared in his leader's chilling reception. John Stewart has recorded the feelings of the four expatriated Scots in feeling words:

> "The next few weeks were to us of his (Lister's) staff the abomination of desolation. There seemed to be a colossal apathy, and inconceivable indifference to the light, which, to our minds, shone so brightly, a monstrous inertia to the force of new ideas. We four unhappy men wandered about now in the wards of King's, now through older and more famous hospitals, and wondered why men did not open their eyes. In these wards the air was heavy with the odour of suppuration, the shining eye and flushed cheek spoke eloquently of surgical fever. We would show them how things should be done. But how ? We had no patients. We thought of the crowded hours of glorious work in Edinburgh, where Lister had half a dozen wards and 60 or 70 patients, and groaned over our two wards with capacity for a couple of dozen, but only empty beds."

The fact that owing to the lukewarm support of the staff and the apathy of the students the wards under Cheyne's charge were often more than half empty had, however, one distinctly favourable impression upon his career, for he found time to study for the English fellowship and made good use of his opportunities. In 1878 he was made additional surgical registrar to the hospital, in 1879 he took the F.R.C.S. diploma, and in 1881 he secured the Jacksonian prize with an historical epitome of the principles, practice, history, and results of antiseptic surgery; and in the same year he was elected assistant surgeon to King's College Hospital. The association with Lister secured him no quick private practice, but the post-operative care of Lister's cases remained usually in Cheyne's hands. The time soon came when Lister had patients sent to him from all parts of the world, while his advice was regularly sought by consultant physicians at home. In a large proportion of his operations he was accompanied by Cheyne, or by his other great lieutenant (and nephew) Rickman Godlee, and Sir Lenthal Cheatle, who worked as junior with both Lister and Cheyne in private practice, has put it on record that the younger man's accurate judgment and sound sense were made free use of by his chief. At length Cheyne's private practice became a very important one, but for some time the public, and his colleagues, regarded him persistently as a bacteriological assistant to Lister. By his own hospital work, however, he proved himself a thoroughly sound and skilful operator, and as a teacher was in his element; his lectures were among the first, possibly the first in this country, to be illustrated by lantern slides. Cheyne was also responsible for a great advance in clinical teaching at his hospital. Appointed demonstrator or surgical pathology at the hospital, he secured the methodical microscopic examination of all tissues removed at operations, and he incorporated the results of these investigations into the histories of the cases. To carry out this scheme thoroughly he inaugurated a department of his own at King's College Hospital, and paid himself for the establishment of what was really an institute of clinical pathology. Sir Lenthal was his assistant in those days, and records not only his personal debt to Cheyne as an instructor but the advance in scientific teaching that was inherent in making of clinical pathology a hospital department. Cheyne's investigations into tuberculosis and his extensive morphological examination of tuberculous lesions confirmed Koch's discoveries in that field and were models of such work, and his early election to the Royal Society followed. He was, as might be expected, a model examiner, though more lenient than his reserved manner suggested; but no candidate had reason to feel that he had been deprived of chances of making good, and as an examiner he assisted the Universities of Edinburgh, Oxford, Cambridge, and London.

When the South African War broke out Cheyne was immediately appointed civil consulting surgeon to the forces; he obtained mention in despatches and received the C.B. for valuable services. During the fifteen years which elapsed between the end of this struggle and the breaking out of the European War, he was one of the recognised leaders of the surgical profession in the country, filling almost every high office that was open to him. In 1908 he received a baronetcy, and was appointed Surgeon in Ordinary to the King. His association with the Royal College of Surgeons of England had always been intimate. He had not only gained the important prizes but had been Hunterian Professor, and for many years was on the Council. In 1914 he was elected President, and during his term of office the European War broke out. He was appointed consulting surgeon to the navy with the rank of Surgeon Rear-Admiral, and most of his service was discharged in England at Chatham. The appalling experience of our troops from septic wounds drew from him certain communications which placed him in opposition to the views held by other authorities, and he became involved in a polemical discussion which, personalities apart, had its prototype in medical literature some ten years previously, when questions of "sepsis" as against "antisepsis" were hotly debated. Cheyne resented the personal note of some of the reflections upon his views, but looking back on the matter it must be admitted that he had courted criticism, being probably influenced in some of what he said by a too great respect for unessential parts of Lister's original teaching. He was quite a good controversialist, but the double nature of his duties as President of the College of Surgeons and consulting surgeon to the Navy were trying him considerably at the time, and no one regretted that he withdrew from the discussion.

In 1916 Cheyne was made a K.C.M.G., and in that year his term of office as President came to an end. He retired almost immediately from practice, when he was elected to represent the conjoint Universities of Edinburgh and St. Andrews in Parliament. In the House of Commons he proved a real success; he spoke with authority and without dogmatism on what he knew, and only when his particular knowledge was likely to be of service to the Members. In 1918, under a new combination of Parliamentary seats, Cheyne became M.P. for the Combined Scottish Universities, and came to live near London so as to be able to attend to his Parliamentary duties. But his health was already undermined and about ten years ago he retired to his Scottish home, in the Shetlands, and was gazetted Lord-Lieutenant of Orkney and Shetland.

Cheyne was a clear and practical writer, his teaching being always founded on his experience. As far back as 1882 he wrote the Principles, Practice, History, and Results of Antiseptic Surgery, this being an expansion of the Astley Cooper prize essay. This work would repay consultation to-day. In it Cheyne marshalled the facts which made good the position of antiseptic surgery, and stated the case so completely that his words, which were sometimes disrespectful to the older school, became the starting point for the general acceptation of the new view. Three years later he wrote a manual on the antiseptic treatment of wounds, and later still he published lectures on suppuration and septic disease, on tuberculous disease of bones and joints; and, lastly, in coöperation with the late Mr. F. F. Burghard, his great Manual of Surgical Treatment.

We owe to Sir Harold Stiles the following appreciation of Sir Watson Cheyne:—

"I had the good fortune to get to know Cheyne about 40 years ago, when he was the extra-examiner in surgery in the University of Edinburgh. I was in charge, under the late Prof. Chiene, of the department of surgical pathology, and I well remember how keenly interested Cheyne was in my demonstration to him of cancer cells in the efferent lymphatic vessels in and around the mamma in carcinoma of that organ. It was largely due to Cheyne that my researches on the dissemination of cancer were brought to the notice of surgeons in support of the radical operations now generally adopted. At the time of which I speak Cheyne was carrying on his classical researches on tuberculous diseases of the bones and joints, for which he was awarded the Astley Cooper prize, and our keen interest in surgical pathology created a bond between us which ripened into a lifelong friendship. His house in Harley-street was always open to me, and I shall never cease to be grateful to him for his help and encouragement during my struggling days, and above all for his example and inspiring influence. I had the same admiration and reverence for him that Lister's pupils had for their great master.

"Although in his early days Cheyne made a great reputation as a pioneer in surgical bacteriology he had a hard struggle to make both ends meet—indeed, he told me that if he had failed to gain the valuable Astley Cooper prize he might have had to go into general practice. He keenly resented the slowness with which operative work came to him, for he had good reason to think that he was generally spoken of as a bacteriologist and pathologist rather than as a surgeon. I remember his indignation when he was asked by the editor of a large work to write the article on pyæmia: he replied effectively that while he had often produced the disease experimentally in animals he had had no experience of it in the human subject. As was only to be expected, Cheyne was the last of the diehards to abandon antiseptics for a strictly aseptic technique. It was in 1893, after working under Kocher, that I introduced the technique at Edinburgh, when Cheyne paid a visit to the Edinburgh Hospital for Sick Children to see the details carried out. That he was not convinced of the superiority of the aseptic methods was evident from the fact that shortly afterwards he chose as his subject for a Bradshaw lecture 'The advantages of towels soaked in 1:20 carbolic acid over dry sterilised sheets.' I think he was alarmed at seeing me place instruments on a dry sterilised sheet instead ed into a 1:20 solution of carbolic acid. He was evidently still afraid of the germs in the atmosphere. It is only fair, however, to say that Cheyne got better results by his antiseptic methods than did many surgeons who professed to carry out an aseptic technique, while I think that ultimately he became a convert, and that the removal of his handsome beard was an outward and visible sign of that conversion.

"Cheyne was a true man of science as well as a great clinician, and as an operator was superior to his great master. In my earlier days I took him as my pattern of an ideal surgeon. I was fascinated, not so much by his dexterity and rapidity, but more particularly by his calmness when in a tight corner, and above all by the thoroughness, which was seen at its best in his operations for tuberculous or malignant conditions. He had the confidence, born of real knowledge, but he was as modest about his work and capabilities as he was quiet and unassuming in his manner. For years he was one of the busiest of men; and while he shouldered a heavy burden of responsibility and got through a prodigious amount of work, he never seemed to be in a hurry.

"Cheyne had a warm heart and a tender nature, which he hid deliberately or from a sort of innate shyness. He could not suffer fools but none could wish for a truer or stauncher friend, and few men who have reached the high position to which he attained were more deservedly trusted and honoured. To his intimate friends he did not hesitate to reveal the very human side of his character, and he was seen at his best when on holiday at his island home in Shetland where he was greatly beloved; lucky were those who were privileged to be his guests, and they were many. The consummate skill with which he handled his sailing boat in a dangerous sea convinced us that he had the blood of a Norse Viking in his veins."

Many of Cheyne's honours have been already mentioned, but their list is not exhausted. He received honorary doctorates from the Universities of Edinburgh and Oxford, and honorary diplomas from the Scottish corporations, and many prizes from other bodies. His last distinction of this sort was appropriate indeed, when he became in 1924 Lister Memorial Medallist and Prizeman. It was fitting that Cheyne's concluding literary work should have been the expansion of his prize address into that fascinating little book, "Lister and his Achievements."

Sir Watson Cheyne married, first, in 1887, Mary, daughter of Mr. William Servanté, of Plumstead, and, secondly, Margaret, daughter of Mr. George Smith, of Lewick. He is succeeded in the baronetcy by his son, Lieut.-Colonel Joseph Lister Cheyne.

Dr. **ARTHUR EDWARD SPROULLE**, who died at Rotherfield, Sussex, on April 18th, came of a family of doctors. He was born at Mourveen, near Londonderry, in 1866, the son of Dr. Thomas Sproulle, and his four brothers were all medical men. Qualifying L.R.C.P. & S.I. at Dublin in 1889, he settled at Withernsea, Yorks, then little more than a fishing village, in 1892, and for 38 years carried on practice there, watching it grow into a prosperous seaside resort of 5000 inhabitants. When the village became an urban district in 1898, he was appointed medical officer of health, a post he held until his retirement on account of ill-health in 1930. For a large part of the time he was the only doctor in the town, and there is no doubt that continuous overwork, particularly during the war years, when he also looked after large numbers of troops, laid the foundations of the illness which caused his death at a comparatively early age. He was a sound and careful physician, and the respect in which he was held by his professional brethren was shown by his election as chairman of the East Yorks Division of the B.M.A., and later, of the East Yorks and North Lincs Branch. He took a keen interest in the welfare of his township and at one time no meeting in the town was complete without his presence. He raised and trained a division of the St. John's Ambulance Association, was local agent for the Shipwrecked Mariners Association, and a member of the crew of the Withernsea lifeboat, rowing in the boat to a number of shipwrecks.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE.

TUESDAY, May 3rd.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Mr. H. A. T. Fairbank: 1. Dupuytren's Contraction of the Plantar Fascia. Mr. E. Laming Evans: 2. Multiple Fatty Herniæ in Feet. Mr. C. Lambrinudi: 3. Bad Posture Due to Short Hamstrings. Mr. Eric I. Lloyd: 4. Syphilitic Epiphysitis of Upper End of Femur. Other cases will be shown. 7.45 P.M., DERMATOLOGY. Annual Dinner at Langham Hotel.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Paper: Dr. Harley Williams: The Growth of our State Medical Services. A discussion will follow to be opened by Sir Weldon Dalrymple-Champneys. EPIDEMIOLOGY AND STATE MEDICINE. Members of this Section are specially invited to attend and to take part in the discussion. 6 P.M., SURGERY.

THURSDAY.—8 P.M., TROPICAL DISEASES AND PARASITOLOGY. Paper: Colonel S. P. James: A Study of Induced Malignant tertian Malaria. MEDICINE: THERAPEUTICS AND PHARMACOLOGY. Members of the Sections of Medicine, Therapeutics, and Pharmacology are specially invited to attend.

FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Papers: Dr. Logan Turner and Mr. J. S. Fraser: Labyrinthitis: Treatment and Results. Mr. J. S. Fraser: A Case of Bilateral Labyrinthitis. (With slides.) A discussion will follow to be opened by Mr. Sydney Scott. Other speakers: Mr. W. Mollison, Dr. Dan McKenzie, and Mr. F. W. Watkyn-Thomas. 5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Clinical Meeting. 8.30 P.M., ANÆSTHETICS. Dr. H. Bellamy Gardner: Aeris, The New Name Suggested for Nitrous Oxide and Oxygen. Clinical Meeting.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

WEDNESDAY, May 4th.—7.30 P.M. (at the Hotel Rembrandt), Excessive Surgery. Discussion to be opened by Mr. Zachary Cope, Dr. Geoffrey Evans, and Mr. Hamblen Thomas.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, May 3rd and following THURSDAY.—5 P.M., Dr. Harriette Chick: Relation of Light to Nutrition. (Oliver-Sharpey lectures.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 2nd, to SATURDAY, May 7th.—LONDON LIGHT AND ELECTRICAL CLINIC, Ranelagh-road, S.W. An evening course in Physical Medicine, Mon. and Wed., 8 to 9 P.M. Lectures and demonstrations on cases.—ROYAL ALBERT DOCK HOSPITAL, Greenwich, S.E. A week-end course of demonstrations on cases on Sat. and Sun., 9.30 A.M. to 6.15 P.M. (specially suitable for F.R.C.S. candidates).—INFANTS' HOSPITAL, Vincent-square, S.W. Afternoon course in Diseases of Infants.—MAUDSLEY HOSPITAL, Denmark-hill, S.E. Lecture-demonstrations on Psychological Medicine, afternoons only.—LONDON LOCK HOSPITAL, Dean-street, W. Afternoon and evening course in Venereal Disease.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. All-day Clinical course in Diseases of the Ear, Nose, and Throat.—CHILDREN'S HEART HOSPITAL, West Wickham, Kent. Lecture-demonstration on Rheumatic Infection and Heart Diseases in Children. 10.30 to 12 noon, Sat., by Dr. Bernard Schlesinger.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Afternoon course of demonstrations and lectures on Diseases of the Skin.—(The above courses are open only to Members of the Fellowship.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.6.

MONDAY, May 2nd.—10 A.M. to 1 P.M., Gynæcological Ward, Surgical Wards. Genito-Urinary Operations, Skin Department. 2 to 4 P.M., Operations, Surgical Wards. Medical, Surgical, Gynæcological, and Eye Out-patients. 4.15 P.M. (Lecture), Dr. Burnford: Febrile States and their Diagnosis.

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Department. 2 to 4 P.M., Operations, Medical, Surgical and Throat Out-patients. 4.15 P.M. (Lecture), Dr. Pritchard: Some Points in the Diagnosis and Treatment of Goitre.

WEDNESDAY.—10 A.M. to 1 P.M., Medical Wards, Children's Medical Out-patients. 2 to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration. 4.15 P.M., (Lecture), Dr. Burnford: Febrile States and their Diagnosis.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Genito-Urinary, and Eye Out-patients. 4.15 P.M. (Lecture), Dr. Burnford: Febrile States and their Diagnosis.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 12 noon, Medical Lecture. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients.

SATURDAY.—9 A.M. to 1 P.M., Throat Operations, Medical and Surgical Wards, Surgical and Children's Medical Out-patients. The lectures at 4.15 P.M. on Mondays, Tuesdays, Thursdays, and Fridays are open to all medical practitioners without fee.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, May 4th.—4.30 P.M., Mr. Kenneth Walker: Alternatives to Prostatectomy in Prostatic Obstruction.

ST. MARK'S HOSPITAL, City-road, W.C.

THURSDAY, May 5th.—4.30 P.M., Dr. N. P. Henderson: Diagnosis of Carcinoma of the Large Bowel by X Rays and Opaque Enema.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.

WEDNESDAY, May 4th.—3 P.M., Mr. J. G. Sandrey: Post-operative Treatment of Prostatectomy.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, May 5th.—4.15 P.M., Mr. Arnold Sorsby: History of Medicine.

SALFORD ROYAL HOSPITAL.

THURSDAY, May 5th.—Mr. R. Ollerenshaw: Demonstration of Orthopædic Cases.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.

WEDNESDAY, May 4th.—4.30 P.M., Mr. S. Cade: Tongue.

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, May 2nd, and following THURSDAY and FRIDAY.—5.15 P.M., Prof. Otto Grosser: Human Comparative Placentation. (Lantern Illustrations.)

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, May 2nd.—8 P.M., Prof. J. C. Drummond: Recent Researches on the Nature and Function of Vitamins. (Last of three lectures.)

UNIVERSITY OF BIRMINGHAM.

WEDNESDAY, May 4th.—4 P.M., Mr. C. J. Bond: Some Aspects of Human Biology. (Third of five William Withering memorial lectures.)

THURSDAY.—4 P.M., Prof. Seymour Barling: Operative Treatment of Toxic Goitre. (Ingleby lectures.)

MANCHESTER ROYAL INFIRMARY.

TUESDAY, May 3rd.—4.15 P.M., Dr. F. E. Tylecote: Hypnotics.

FRIDAY.—4.15 P.M., Dr. Crighton Bramwell: Demonstration of Electrocardiographic Methods.

ROYAL HOSPITAL FOR SICK CHILDREN, Glasgow.

WEDNESDAY, May 4th.—4.15 P.M., Dr. Stanley Graham: Medical Cases.

Vacancies

For further information refer to the advertisement columns.

[illegible] Hon. Asst. P.

—Jun., H.S. At rate of £120.

msdale Hospital.—H.S. At rate of

Bedford County Hospital.—Second H.S. At rate of £140.

Birmingham City, Maternity and Child Welfare Dept.—Four Temporary M.O.'s. £9 10*s.* per week.

Birmingham and Midland Eye Hospital, Church-street.—Two Out-patient Officers. Each 1 guinea per session.

Birmingham, Queen's Hospital.—H.S. At rate of £70.

Bradford Children's Hospital.—H.S. £100.

Bradford Royal Infirmary.—H.P. and H.S. Each at rate of £135.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.

Burton-on-Trent, General Hospital.—Cas. O. and H.P. £150.

Cambridge, Papworth Village Settlement.—Second Asst. M.O. £400.

Canterbury, Kent County Mental Hospital, Chatham.—Jun. Asst. M.O. £350.

Carlisle, Cumberland Infirmary.—Res. M.O. At rate of £155.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Assts. for Out-patient Dept. Also Res. H.S. At rate of £75.

Chester Royal Infirmary.—H.P. £150.

Connaught Hospital, Walthamstow, E.—Res. Cas. O. At rate of £100. Also Hon. Anæsthetist.

Constance-road Institution, Dulwich, S.E.—Asst. M.O. £250.

Dundee Royal Infirmary.—Visiting M.O. for Diseases of the Skin.

Essex C.C.—Jun. Asst. County M.O.H. £500.

Evelina Hospital Hospital for Sick Children, Southwark, S.E.—Hon. Ph

Hospital for *Chest, Brompton, S.W.*—J At rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Secretary. £750.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

L.C.C. Mental Hospital Service.—Asst. M.O. £475.

Leeds General Infirmary.—Hon. Asst. Physician.

Leicester, Combined Sanatorium and Fever Hospital, Markfield.—Med. Supt. £850.

Leicester Royal Infirmary.—Res. Asst. Anæsthetist. At rate of £250.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Liverpool, Alder Hey Children's Hospital.—Med. Supt. £1000.

Liverpool City.—Pathologist. £700.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. to Med. Supt. £250.

London Female Lock Hospital, 283, Harrow-road.—Asst. Non-Resident Surg. Reg. £50.

London Jewish Hospital, Stepney Green, E.—Res. M.O. and Cas. O. Each at rate of £150. Jun. Res M.O. At rate of £100. Also Clin. Asst. for Actinotherapeutic Dept.

Lowestoft, St. Luke's Hospital.—Res. Asst. M.O. £350.

Manchester, Ancoats Hospital.—H.P. At rate of £100.

Manchester, Royal Manchester Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.

Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.

Middlesbrough, Holgate Municipal Hospital.—Res. H.P. At rate of £170.

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Res. M.O. £200.

National Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. Phys.

Newcastle General Hospital, Newcastle-upon-Tyne.—Res. Med. Asst. At rate of £100.

Newcastle-upon-Tyne Hospital for Sick Children.—Jun. H.S. At rate of £100.

Plymouth, South Devon and East Cornwall Hospital.—Res., Anæsthetist and H.S. to Spec. Depts. At rate of £100.

Preston and County of Lancaster Royal Infirmary.—Cas. O. At rate of £150.

Princess Beatrice Hospital, Richmond-road, S.W.—Hon. Clin. Assts.

Royal Chest Hospital, City-road, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Royal National Orthopædic Hospital.—H.S. for Country Branch, at Stanmore. At rate of £150.

Ryde, Isle of Wight County Hospital.—Res. H.S. £180.

Salvation Army, Mothers' Hospital, Lower Clapton-road, E.—Sen. Res. M.O. £150.

Sheffield Royal Hospital.—Two Asst. Cas. O.'s. Also Res. Anæsthetist. Each at rate of £80.

St. Alfege's Hospital, Vanbrugh-hill, S.E.—Asst. M.O. £350.

Torquay, Torbay Hospital.—H.S. £175.

Weir Hospital, Grove-road, Balham.—*S.W.*—Jun. Res. M.O. for War Memorial Maternity Home. £150.

West Hartlepool, Howbeck Infirmary.—Visiting Consultant for Eye, Ear, and Throat.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Winchester, Royal Hampshire County Hospital.—Res. Surg. O. Also Matron. Each at rate of £200.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

The Chief Inspector of Factories announces the vacant appointments for Certifying Factory Surgeons at Uffculm (Devonshire) and Wartle (Aberdeenshire).

Workmen's Compensation Act (Northern Ireland), 1927. Medical Referee for the County and City of Londonderry. Particulars from the Secretary, Ministry of Labour, Stormont, to whom all applications should be forwarded not later than May 7th.

Births, Marriages, and Deaths

BIRTHS.

MCOUAT.—On April 18th, at the Private Hospital, Leicester, the wife of J. T. McOuat, M.B., F.R.C.S.E., of a son.

REED.—On April 21st, at High-street, Broadstairs, the wife of J. B. Reed, L.D.S. R.C.S., of a daughter.

MARRIAGES.

NORTHFIELD—SLATER.—On April 16th, at St. Mary's Church, Hendon, Douglas William Claridge Northfield, M.S., F.R.C.S., to Eva Marjorie, elder daughter of the late Mr. P. M. Slater and Mr

SUTHERLAND—CARTER.— Presbyterian Church, Bath, Al Ch.B. Edin., W. Leonard eld-gardens,

WILSON—SMITH.—On April 23rd, at All Saints' Church, Woodford Green, William Craig Wilson, B.A., M.B., Ch.B., and Edith Mary Partington Smith, M.A., B.Ch., only daughter of Mr. and Mrs. Harry Smith, Ryecroft, Woodford Green, Essex.

DEATHS.

CHEYNE.—On April 19th, in a nursing home, Sir William Watson Cheyne, Bt., of Leagarth Fetlar, Shetland, in his 80th year.

GIRVAN.—On April 17th, suddenly at sea, on board the s.s. *Duchess of York*, Alexander Girvan, M.D., F.R.C.S.Edin., of Brooke-road West, Waterloo, Liverpool.

SARJEANT.—On April 24th, suddenly, at Parkhurst-road, Holloway, N., John Frederic Sarjeant, M.R.C.S., L.R.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE CONTROL OF INDUSTRIAL RHEUMATISM.*

BY W. S. C. COPEMAN, M.B., M.R.C.P.,
S. PHYSICIAN TO THE BRITISH RED CROSS SOCIETY'S CLINIC
OR RHEUMATISM; ASSISTANT PHYSICIAN TO THE HOSPITAL
OF ST. JOHN AND ST. ELIZABETH, LONDON.

The Present Position.

1. *Medical aspect.*—A medical officer of health ently wrote: "One finds in institutions and ewhere a considerable number of persons incapaci-ted by rheumatic disease. The only medical sistance most can get is occasional drug treatment om town doctors or sporadic out-patient treat-ent. . . . These hopeless wrecks are considered evitable. (cf. position of tuberculosis 50 years o.)"

The insurance practitioner to-day has no power pass on rheumatic patients for special—e.g., ysical—treatment; and although this is true of ost diseases he would probably be specially glad do so in such a chronic disorder as rheumatism. l that he can do for the average case is to prescribe algesic drugs, give certificates for repeated absences om work, or advise his patient to go to hospital. his private capacity he may, in addition, diagnose e case correctly, give advice on diet, rest, exercise, plication of heat, or rubbing (by district nurse ssibly). give vaccine or shock therapy, and, finally, force of personality encourage the patient to rsevere. As regards perseverance, the lack of ficial liaison between panel and hospital often oves disastrous in any form of chronic disease, d this is particularly true of arthritis—although is would prove less important if beds and proper t-patient physical departments were provided sewhere. Under "dental benefit" focal sepsis om teeth is also dealt with.

The difficulties encountered in this field of medicine e great. This is. however. no good reason for ntinuing to ignore them. It seems reasonable to elegate them to those members of the profession ho wish to tackle them and recognise both medical d lay specialisation in this field as legitimate and esirable, as in the case of tuberculosis. The only urely medical body apparently attempting to deal ith the problem on a large scale at present is the igue internationale contre le rheumatisme, which as unfortunately no very active English committee. his body emphasises the need for, and fosters, aison between the medical profession, the State epartments, and insurance bodies in their common ttack on the problem.

The Ministry of Health issued a well-informed and ympathetic report (J. A. Glover) on the whole ubject in 1928. The National Health Insurance Acts appear at present to stand somewhat in the way f the adoption of their scheme (on which my own s based). To allow either to be adopted in its ntirety an amending Act would be desirable. although f all the approved societies concerned could show surplus on valuation they could, if they wished, ut the proposals into operation under Additional Benefit 16 of the 1928 Act.

2. *The social aspect.*—The State policy in this ountry is to assist voluntary effort. so that insurance nay be provided against both sickness and disable-nent—i.e., acute and chronic disease. The legislature s, therefore, presumably prepared *to meet* public vishes. but public opinion must be educated to expect nore in this matter. At present *the only "benefits"* applicable to rheumatism are: capitation fees for loctors for advice: chemists' bills paid *for insurance* practitioners' drug prescriptions; and cash allowances on doctors' certificates of incapacity or disablement. A few approved societies with surplus funds can pay *voluntarily* certain sums direct to medical institutions under the 1928 Act. This clause was added specifically to include physical treatment, and 79 approved societies have included this benefit during the past year and are believed to have found it satisfactory.

OBSERVATIONS.

1. The only methods of dealing with a disease which costs £17,000,000 per annum are, at present, analgesics and weekly "doles." Presumably because rheumatism does not kill its victims.

2. Preventive and other therapeutic measures are not provided, and therefore often believed not to exist.

3. In the case of tuberculosis (which costs the country less than rheumatism) the law provides for institutional treatment. Rheumatism needs this equally for its proper treatment.

4. The chief medical officer of the Ministry of Health recognised the preceding points in his report for 1925, and put forward suggestions then.

Arguments for Systematic National Control.

The reasons for dealing with chronic rheumatism systematically on a national scale include the following. The disease at present causes a large loss in money, and an immense amount of preventable suffering and crippledom. Nothing systematic is at present being done in England, whereas other countries—e.g., Germany and Sweden—find it worth their while to tackle the problem. Lay opinion is in favour of action, but lacks medical guidance, while research, which is very desirable in this group of diseases, could be stimulated and rendered possible on larger scale than at present. Attempts on a small scale in local areas (some of which are being planned) are likely to be less efficient than if they form part of large schemes, because they will probably have less money and possibly not use it to the best advantage; because they will have less medical and other encouragement and have less medical skill and experience at their disposal, and because they will probably overlap with other institutions. Any large movement should therefore be centralised, however loosely. Possibly there should be some central advisory body of medical and lay experts who can correlate the large amount of experience now available.

"Rheumatism is a burden to the country in two ways: (1) If patients have limited means they must be provided with medical aid. (2) If patients are unable to work, they must be supported financially. If a more far-seeing policy were adopted, *prevention* would also become a social responsibility" (R. F. Fox).

The basis of an active campaign (apart from the necessity for a definite scheme) would be early diagnosis. and the establishment of physical treatment clinics in towns. Provision should also be made for in-patient treatment, which is especially important in some of this group of diseases at certain stages. The London County Council has made a move in this direction by allocating ten municipal hospital beds for treatment and investigation at the British Red Cross Clinic for Rheumatism.

Arguments against the Establishment of Clinics.

The first argument against the clinic is "unnecessary expense." But in such a costly and painful disease group. if further efficient therapeutic help can be made available for the insured population, it would seem to be justified morally and also financially (by lessening subsequent invalidity pay). It may be said. again, that the value of clinics is not definitely known in this country. But a scheme such as that suggested below could be put into operation in London—as is partially already the case—and its value could be worked out by the approved societies. It might then be copied in other towns if, as appears almost certain, they approved the value of the methods.

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* Abstract of a lecture delivered at the Royal Institute of Public Health on Feb. 24th.

Another argument against the scheme is that it would probably evoke opposition from insurance practitioners. The answers are :—

(1) "Clinics" are known to be suspect, but no practitioner need avail himself of the service suggested. It is designed, moreover, to increase their therapeutic resources in a disease in which they often find their ordinary resources are inadequate.

(2) Patients could only be referred for "courses" of treatment, and would therefore be automatically returned to their practitioners (as at Peto-place) after this had finished.

(3) Such treatment is not a substitute for ordinary methods of treatment but an additional method. Such institutions would therefore not "compete" with the insurance practitioner any more than do the voluntary hospitals. Ideally the clinics would actually be extra departments of voluntary hospitals; the practitioner would not, therefore, suffer financial loss by referring patients to them.

Lastly, it is suggested that possibly other diseases should also be singled out for special treatment. But such a scheme is necessary only in the case of a chronic disease which occurs on a scale large enough to merit the title of a social menace. These diseases are four in number :—

(1) Tuberculosis.—Efficient scheme already in force.
(2) Venereal diseases.—Efficient scheme already in force.
(3) Cancer.—Owing to dramatic appeal of this disease adequate voluntary effort is forthcoming.
(4) Chronic rheumatism.—The most costly of the three (to the country), but lacking in dramatic appeal because it is not fatal. Scheme suggested.

Outline of a Scheme.

The factors to be considered are *prevention* (predominantly a social question); *detection* (a mixed social and medical question); and *treatment* (predominantly a medical question).

PREVENTION.

Under this heading the following points may be briefly mentioned :—

1. *Exposure* to extremes of heat, cold, and moisture. Draughty offices, &c. Provide drying rooms, &c.
2. *Hygiene.*—Dietetic, e.g., "tea and bun habit"; beer; lead; general hygiene.
3. *Occupational fatigue.*—Mechanical trauma, such as trauma from undue or unilateral loads; for example, it is suggested that dock labourers should be limited by international agreement to loads of 150 lb., to save hips and backs. Undue or unilateral strains due to design or position of machinery, postural defects, provision of pit-head baths at mines, &c.
4. *Mental strain*, especially in women. Rest pauses where band conveyor is used. Variation of occupation. Recreation and sport.
5. *Housing.*—See Architects' B.M.A. report re juvenile rheumatism; damp-courses, situation of sites (M.O.H. has considerable power), sunlight, &c.
6. *Infection.*—Focal, and untreated traumatic sepsis. (Sunlight and breathing exercises for sedentary workers.)

Those responsible for prevention are primarily factory owners and managers, welfare workers and nurses, shop stewards and trades unions, factory inspectors, and the workers themselves; secondarily, medical men.

DETECTION.

The object is to get cases in an early and therefore curable stage. This can be done by coöperation between those responsible. Vocational guidance centres might aid by advising pre-rheumatics against unsuitable occupation. Points to be noted at this stage of disease are :—

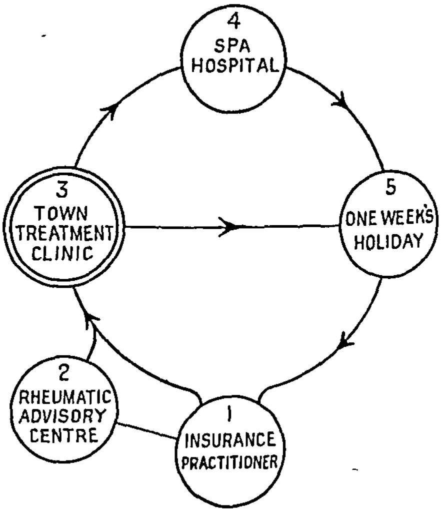
1. Women predominate over men sufferers.
2. Pains may at first be mild, transient, and variable. "Tingling" in limbs; "chilly subjects"; poor circulation.
3. General pallor and poor health common for considerable time previously (pre-rheumatic stage). Often rheumatic troubles at school.
4. "Fatigue factor" and "nerves" generally obvious.
5. Menstrual disturbances common. Dry skin.
6. Rheumatic family history common.
7. Bad teeth or frequent sore-throats, or "discharge" (in women). Climacteric.

(*a*) *In factories and the like* (supplementary to rest of scheme).—Where early detection on these lines is attempted, the effort should be specifically made by the works' doctor, who would deal at stated times with the diagnosis of doubtful cases; he would treat them or refer them for further investigation or specialist treatment at the clinic in the area. He should also from time to time meet the factory staff, and give a talk on the early signs and impress the need for early treatment or prevention. Such an organisation, which would be desirable in every community of workers numbering 2000 or more, might be termed a *prophylactic centre.*

(*b*) *In cities* (for general population outside factories).—The normal provision for diagnosis would be :—

1. The *insurance practitioner.*
2. The *Rheumatism Advisory Centre*, of which there would be two or more in every large town.
3. *Treatment clinic.* (One of the advisory centres should be in this building.)

Patients may thus, with the consent of their doctor, get advice in the area most convenient to them. If treatment proved necessary, they would be referred to the central treatment clinic with notes on their condition and requirements. Their cases would also, later, be "followed up" from the centre they first attended. Diagnosis would under this scheme be decentralised, and not treatment. This would be less expensive than the reverse.



1. *Insurance practitioner* who can refer his patient either to:
2. *Rheumatic advisory centre* in area, or direct to:
3. *Central treatment clinic*, where patient could receive (say) three courses of physical treatment, without stopping work. If further treatment appeared desirable, patient could go on to the
4. *Spa hospital*, where he could be treated up to two or three months.
5. *One week's holiday* at least is desirable, if possible, after treatment at either place.

Patient would then report back to the *practitioner.*

The insurance practitioner's rôle is chiefly early routine diagnosis, removal of obvious focal sepsis, general advice, and encouragement. The advisory centres would be established on the model of the various centres already available for juvenile rheumatics. and should be housed, if possible, in some building in medical use, where other clinics are held, and should be established if possible at the request and with the coöperation of the M.O.H. of the area (who might advertise it with his other clinics). It is essential that the insurance practitioners should be in sympathy and coöperation with the scheme, which is designed to increase their available therapeutic resources and to coöperate with them in preventing permanent invalidity. Cases should only be accepted on their recommendation. Each session at the centres should be held in weekly rotation, after normal working hours, by a member of the medical staff of the central treatment clinic, and cases referred by him for treatment to the clinic would be under his care during this period to ensure continuity. If the area served by these advisory centres extended beyond the towns, patients from outside could be supplied with a list of hostels or recommended addresses, where they could stay cheaply during the course of treatment and be near the clinic. In order that a complete diagnosis of all cases could be made at these centres, the clinic pathologist might attend for a short time at each session at the diagnostic centres to collect material for necessary tests.

TREATMENT.

Clinical material to be dealt with comprises early cases, non-curable cases which can be improved, and totally disabled cases.

Early cases would be dealt with by the town clinics where infective foci could be searched for and removed (if practitioner desires). There would be systematic physical treatment after working hours, so as to keep the patients at work during day. Two or three courses could be given with intervals between. They should then report back to their private doctor. If practicable, there should be an "after-cure" of one or two weeks at bracing health resort (not in "convalescent home"), if the patient is a "time-rate" worker, for such workers often cannot get a holiday otherwise. (Piece-workers can, by sacrificing pay for a period.) It may be advisable to change occupation, if this is obviously causative.

Cases no longer curable, but which can be much improved, can be dealt with by (*a*) town clinics, and (*b*) spa hospitals. The latter should give more freedom and provided occupation, and the stay could be prolonged up to two to three months in certain cases. In the provinces, where there is a spa hospital within easy reach of towns, this may take the place of a town clinic. Cases whose affection is chiefly in the legs and who find much difficulty, therefore, in attending as out-patients at a town clinic would be eligible even if not otherwise severe cases. After the patient leaves the spa hospital it might be desirable to arrange attendance at a re-education centre to train him for lighter employment. Machinery for provision of alternative employment might also be arranged. Compare the work of Jansen (Denmark) and Kahlmeter (Sweden) in getting borderline disabled cases back to work through in-patient sanatoriums outside towns in healthy places.

Totally disabled cases.—The possibilities would be: (*a*) palliative treatment at regular periods, and (*b*) accommodation in special institutions if the home conditions undesirable; possibly there might be special institutional piece-work, for which small sums might be paid. The cases in this category would not necessarily come into the present scheme.

The Three Therapeutic Agencies.

The three units chiefly concerned in this scheme are insurance practitioners, the town treatment clinics, and the spa hospitals. The function of these is: to diagnose cases early and carry out preliminaries; to cure or relieve; and (as concerns the clinics and hospitals) to teach and investigate. I have already spoken of the rôle of the insurance practitioner, but must deal in more detail with the others.

TOWN TREATMENT CLINICS.

(*a*) *Curative aspect*.—The clinics would be on hospital lines, and preferably not run by municipal or purely local bodies. They should provide all forms of treatment that are otherwise not available in area. These may include general bath treatments; general hot air and vapour rooms; general and local electrical treatments, including ultra-violet rays and massage; local mud and paraffin wax treatments; colonic lavage; vaccine and other injection therapy; and a dispensary.

If there is a general hospital in the area, overlapping should be avoided, and liaison made (usually most easily with the particular members of staff interested with whom cases may be exchanged). Methods which hospitals and practitioners are equipped to give—e.g., drugs and vaccines—should be subordinated, at the clinics, to methods less generally provided, such as baths and other physical methods. Public medical baths are available in a few industrial towns, and fuller use might be made of them. Specialists whose opinion will be often desirable at the clinics—such as orthopœdic and ear, nose, and throat surgeons, dentists, and gynæcologists—who are already on the staff of the area hospital, might consent to attend, say once weekly, to see patients referred to them. They would then refer the patients who needed treatment to their own hospital departments. This would also encourage liaison with the hospitals and outside practitioners.

The clinic should be staffed by two or more specialist physicians, since this leads to more progressive work than is done under a single medical director. Results can be watched and compared, and the clinic is of more value for post-graduate teaching purposes.

Pathological laboratory work may be provided for at the clinic, in which case a whole- or half-time pathologist and equipment will be needed, or may be undertaken by an outside laboratory at contract. The former plan is the better. The matron will control the treatment staff; male and female, who should all be chartered, and V.A.D.'s where available, should be used elsewhere and will save expense. There should be an almoner's department, from which patients can be followed up. This work inevitably becomes somewhat elaborate, owing to the time involved in following up such a chronic disease (often many years). It would be done best, probably, through the diagnostic centres which referred the patients originally.

By centralising these clinics into large towns, rather than by setting up large numbers of small clinics (as is at present the tendency), large numbers of patients would be seen, more experience gained, and in consequence better results achieved. More reliable statistics also become available. The value of such a centre is much enhanced if beds are available for treatment and investigation, and if easy reference of cases to the spa hospitals is possible.

The appointment system should be used both for consultations and treatments.

Most of the points referred to above are the outcome of experience at the B.R.C.S. Clinic for Rheumatism in Peto-place, and many of them are already embodied in the organisation of that clinic, which is only, it is to be hoped, the first of many other similar institutions, although strict standardisation is to be avoided.

Teaching and research.—Medical post-graduate teaching is very desirable, since no provision is made for teaching of physical medicine in medical curriculum, and physical methods need considerable skill and experience to get good results. They are, therefore, not so widely appreciated and used as they would otherwise be. If this were a success, universities might establish readerships or lectureships in the subject, possibly in connexion with the institution. Masseurs, masseuses, and nurses must be trained in order to provide a staff for the future use of the clinic and for other centres. (The C.S.S.M.G. run courses at Peto-place.)

Research is an urgent need in this branch of medicine. The subject of chronic rheumatism has never, until recently, inspired enthusiasm, except in few individuals, and is therefore most neglected. Besides medical research, lay research workers are needed to study such subjects as conditions of employment and environment. The Institute of Almoners have a whole-time research worker at Peto-place investigating the psychological and environmental antecedents of certain rheumatic patients.

SPA HOSPITALS.

These institutions, which are mostly foundations of considerable antiquity, were, until the nineteenth century, the only places where rheumatism was specifically dealt with. They treat some 3000 to

4000 patients a year, but for various reasons are not used at present to their full advantage (as pointed out by Sir George Newman in 1928). Their sphere of utility would be increased—

(a) If they could be brought into full coöperation with schemes for the preliminary town treatment of rheumatics, and spa treatment could, therefore, be included in the normal course of a majority of the cases which are no longer curable but which can be improved, and cases unable for any reason to attend town clinics as out-patients.

(b) If patients could be retained for longer periods.

(c) If, as previously mentioned, some scheme could be evolved whereby more freedom and definite occupation could be given to the patients.

The patients' energies are often normal, although hampered in expression by local limitation, and should be given an outlet, both physical and mental. Patients in these hospitals get the best treatment available, but are often bored; this is highly undesirable at the beginning of what is often a very chronic disease. This, if realised to be a real need, could fairly easily be remedied locally. Such bodies as the Workers' Educational Association and local dramatic societies could be called upon to play a part in instruction and entertainment.

Conclusion.

In conclusion, three paragraphs from the Ministry of Health report on "Chronic Arthritis" may be quoted in justification of some such scheme.

"Fundamental uncertainties can only be cleared up by a continuous and intensive study, from every point of view, of large numbers of patients in the early stages of the disease. To this end an organisation which includes full facilities for *assembling together sufficient patients, and for thorough* diagnosis, careful records, complete equipment for early and adequate treatment, and an effective system of following up seems essential. It would appear that to achieve such an organisation the provision of one or more special 'units' or institutions is necessary. (This paragraph was the stimulus which produced Peto-place.)

"A proportion of chronic arthritics (amounting to perhaps 10–15 per cent., and including many of those acute cases which occur in comparatively young female patients) are exceedingly intractable to treatment of any kind. These cases have produced an impression, which still survives in many quarters, both professional and lay, that chronic arthritis is an incurable disease.

"On the other hand, whilst no specific remedy is known, it would seem that a much larger proportion, perhaps one-third of all cases, can be cured, and more than another third *relieved to a greater or less extent by early appropriate* and skilful treatment. Far from chronic arthritis being incurable, there are few disease groups in which early and proper treatment is more necessary or more effective."

To summarise, for the efficient treatment of chronic arthritis in this country it is desirable:—

(1) That the subject be regarded as a proper field for specialised medical diagnosis and treatment, including the precise use of physical methods.

(2) That the coöperation of interested lay bodies be obtained (approved societies, &c.).

(3) That some definite scheme, incorporating both the medical and lay bodies concerned, be inaugurated. A skeleton scheme is suggested in some detail and deals separately with prevention, diagnosis, and *treatment centralised in towns. It could be put into* immediate partial operation without amendment of the National Health Insurance Acts.

(4) That re-education and amelioration for patients in the later stages of disease, and too advanced to return to work, but able to do light work, would be worth undertaking.

"Although many cases of arthritis cannot be cured, there are few indeed which cannot be relieved and the disease arrested with periodical courses of treatment" (Glover).

THE centenary dinner of Messrs. C. J. Hewlett and Son, Ltd., export druggists, was held on April 23rd, at the Abercorn Rooms, Bishopsgate, when about 140 guests were present under the chairmanship of Mr. Vivian C. Hewlett, F.C.S., grandson of the founder of the business. The toast of the firm was proposed by Dr. A. Cox, and supported by Mr. A. R. Melhuish, President of the Pharmaceutical Society. The chairman and Mr. E. J. Millard, managing director, replied. During the proceedings the staff presented the chairman with his portrait in oils.

NEW PREPARATIONS.

(1) RESYL (Clayton Aniline Co., Ltd., Southwark-street, London, S.E.).—Resyl "Ciba" is a syrup prepared by the Society of Chemical Industry, Basle, containing glycero-guaiacol ether for use as a guaiacol substitute in the treatment of inflammatory conditions of the respiratory tract, the claims made for it being that it is readily absorbed, antiseptic, facilitates expectoration, and lessens irritation. The syrup is put up in bottles of 200 g. It may be taken undiluted or mixed with water, milk, tea, or other fluids, and the dose for adults is 3–5 teaspoonfuls daily, while children may take from 1–3 teaspoonfuls. The carton contains the warning that the content is to be used only in accordance with the directions of the doctor.—(2) PERCAINAL CIBA, also *prepared by the Society of Chemical Industry,* contains percaine incorporated with a bland base which is readily absorbed, distilled extract of witch-hazel (6 per cent.), and a solution of aluminium formate (10 per cent.), the ingredients thus justifying the claims for antiphlogistic and astringent properties. It has been designed, accordingly, for application to the skin and mucous surfaces in eczema, herpes, pruritus, hæmorrhoids, and cracked nipples. It is put up conveniently in collapsible tubes containing 40 g.

ALPHIDINE (Oppenheimer, Son and Co., Ltd., Handforth Laboratories, Clapham-road, London, S.W.).—This preparation is described as a non-toxic, non-irritant, assimilable allotropic form of iodine which produces a colloidal solution in water, and clinical reports, from England and America, would suggets therapeutic activity and absence of manifestations of depression. It has been tested on arthritic patients with promising results, and improvement has been noted in pulmonary tuberculosis, and in obesity weight has been reduced by loss of abdominal fat. Its employment is indicated in all cases where iodine or the iodides are called for. The dose is from one to four pulverettes three times daily, and they can be obtained in bottles of 50, 100, 500, and 1000.

KARO (Corn Products Co., Ltd., Bush House, Aldwych, London, W.C.) has the following percentage composition, according to the manufacturers' statement: dextrine and malto-dextrine, 35·41 (46·08); *maltose, 10·10 (13·17); dextrose, 23·31 (30·34);* other carbohydrates, 0·50 (0·65); sucrose, 2·50 (3·25); invert, 3·50 (4·55); ash, 1·51 (1·96); water, 23·17. (The figures in parentheses show dry basis.) One fluid ounce (or two tablespoonfuls) of Karo is equal to one avoirdupois ounce of sugar and provides 120 calories. The substance, which is in the form of a syrup, has for its chief carbohydrate dextrin, which is non-irritating and fermentable with difficulty. Clinical reports would indicate its value in the feeding of undernourished and sick infants. It is manufactured at Trafford Park, Manchester, and is put up in 2 lb. tins, upon which are printed instructions for its use in the case of infants, children, and adults, together with a feeding table for average *babies.*

IN connexion with a scheme for providing free classes for unemployed men and women, the name of a doctor able and willing to spare an hour or two on Friday afternoons to take a first-aid class is wanted. Any medical man or woman who could help is asked to communicate with the Principal, Morley College for Working Men and Women, 61, Westminster Bridge-road, London, S.E. 1.

Mr. Watson Turnbull (21, Sheen-road, Richmond, Surrey) writes: I have produced a series of dry-point portraits of a number of prominent personages in British medical science, among them being Lord Lister, Sir J. Y. Simpson, Sir Jas. Paget, *Sir Patrick* Manson, Sir Arthur Keith, and Sir Ronald Ross. The impressions are strictly limited to 25 from each plate. An impression from the Sir A. Keith plate is exhibited in the 1932 Salon, Paris.

ADDRESSES AND ORIGINAL ARTICLES

ON STERILITY.*

y Victor Bonney, M.S. Lond., F.R.C.S. Eng.,
F.R.A.C.S.,

ETRIC AND GYNÆCOLOGICAL SURGEON TO THE MIDDLESEX
SPITAL; SURGEON TO THE CHELSEA HOSPITAL FOR WOMEN.

HE requisites for conception are a fertilisable egg- , a potent sperm, an uninterrupted trackway ng which they may meet, and a surface suitable the implantation of the oösperm.

The Egg-Cell.

Modern research is agreed that the human egg- l escapes from the follicle about midway between o menstrual periods, but how long it takes descend into the uterus is not known with rtainty. Under normal circumstances only one hiscence occurs a month. In certain individuals hiscence either does not occur at all or only very dom, either because the ovaries are naturally fective or have been damaged by inflammation new growth, or because, though healthy, their ulating function is in abeyance owing to hormonal ficiency. The sterility produced by any of these uses is absolute so long as the cause persists.

Sterility may also be relative, for the results of ock-breeding show that amongst a species some males are infertile to certain of the males, though ey are fertile to the rest, and this almost certainly olds good for human beings, though it is difficult to rove in individual cases. Arthur Robinson in a lassical paper showed that in animals the fertilised vum may for no known cause perish at a very arly period after fertilisation before any signs of regnancy have had time to declare themselves. This probably happens with more or less frequency n most married women, and constantly in some, who re then labelled as sterile, though in fact they are not really so.

The Sperm.

It is generally agreed that fusion between the egg-cell and sperm takes place in the tube, but how long it takes the human sperm to ascend thus far is not accurately known, and still less the period of time over which, having gained the tube, it can maintain itself there.

Sperm-impotence may be absolute owing to deficient vitality of the male element, or it may be relative just as egg-cell infertility may be. Further, the sperm though healthy at the start of its journey may have its potency destroyed or weakened by the toxic effect of abnormal discharge from the female passages. We know very little about this, for the task of mixing together vaginal secretion and semen and watching what happens under the microscope is distasteful, but such researches carried out on the Continent indicate that the toxic effect of vaginal discharge can be an important factor in sterility. I have always thought that the phenomenon of profluvium seminis must be due to the sperms retreating en masse from an environment hostile to them.

Though the sperm be potent its deposition may be defective, either on account of weakness of the male organ or deformity such as hypospadias. That its powers of ascent are at times remarkable is shown by the fact that deposition on the vulva may be followed by pregnancy, and I have seen two cases in which conception occurred though the woman's clothes barred direct contact.

The Trackway.

The female genital canal is divisible into (1) the ovarian segment; (2) the peritoneal segment; (3) the uterine segment; (4) the cervical segment; and (5) the vaginal segment, and if any one of them be occluded pregnancy cannot occur.

Ovarian segment.—That the follicle after dehiscence forms the upper end of the female genital canal is proved by the occurrence of ovarian pregnancy. Failure of dehiscence may be due to some primary defect in the ovarian structure, but more commonly it is the result of peripheral sclerosis or adhesions of inflammatory origin.

Peritoneal segment.—The fact that the peritoneal cavity itself forms part of the genital trackway, is not, I think, sufficiently appreciated, and yet the distance the ovum has to travel from the follicle to reach the fimbriated extremity of the tube is in most cases the best part of an inch, whilst in those instances where pregnancy occurs in a woman possessing only one ovary and one tube and those on opposite sides, the distance travelled must be two inches or more. The idea that the fimbriated extremity clasps the ovary is no longer entertained, as far as regards human beings at all events, nor does there obtain in our species an obvious mechanism for practically compelling the ovum along the right path such as exists in certain of the lower animals. The relation borne by the fimbriated extremity to the ovary varies immensely in different women. In some it is closely applied to it, but in others it hangs pendant below and widely removed from it. Moreover, the point at which dehiscence occurs on the surface of the ovaries varies. One might have opined that Nature would arrange that it invariably took place on that part of the surface closest to the abdominal ostium, but such is not the case. I have often seen a recently dehisced follicle situated at the inner pole just outside the ovario-uterine ligament and as far away from the abdominal ostium as possible. In short, considering the purpose for which the structures concerned exist I cannot conceive of a more imperfect mechanism, and never cease to marvel at the wonder of conception achieved in spite of such discouragements. It would appear certain therefore that the ovular wastage along the peritoneal segment of the trackway must normally be large, whilst under abnormal conditions, such as adhesions of omentum, appendices epiploicæ or intestine, every egg-cell escaped from the ovary must perish in the abdominal cavity.

Tubal segment.—Our knowledge of tubal occlusion as a cause of sterility has made enormous strides since the invention by Rubin of the tubal insufflation test. The apparatus I use is simpler than Rubin's and has, I think, certain advantages over it. It consists of a hollow uterine dilator to which a rubber bulb and sphygmomanometer is attached by means of lengths of pressure tubing. The cervix is dilated by ordinary uterine dilators to a size just less than the size of the hollow dilator, so that when this is introduced it fits the cervix too tightly for air leakage to occur. The bulb is then compressed with the hand and the pressure applied noted by observing the manometer. With normally patent tubes air passes through at a pressure of 50 mm. or less. Where the pressure has to be raised to 100 mm. or over there is a degree of obstruction. This may be due to abnormal smallness of the tubes or to occlusion of one tube only or to kinks or strictures or partial closure of the abdominal ostia. If in spite of the pressure being raised to 200 mm. no air passes, bilateral tubal occlusion in all probability is present. The patient, having been anæsthetised, should be in the lithotomy position and slightly tilted head downwards so that the vagina can be filled with weak mercurial solution which by bubbling will disclose any leakage of air backwards through the cervix. Tubal insufflation is performed by some in the consulting room without an anæsthetic, but I personally disapprove of it, for apart from the fact that sooner or later this practice will result in the hurried carrying up to a bedroom of a fainting or even a dead woman, it is in my opinion impossible under such conditions to be sure of preventing leakage backwards from the cervix, and unless this can be achieved with certainty, the whole proceeding is useless. It goes without saying that the test should never be carried out on a patient whose vagina or cervix presents any suspicion of infection, and it is a wise precaution to prohibit marital relations for some time beforehand.

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* Read before the Windsor Medical Society.

Lipiodol.—Of recent years another method of ascertaining the state of the tubes has been invented, which consists in injecting lipiodol into the uterine cavity from whence, if the uterine ostia are patent, it passes into the tubes and, if the abdominal ostia also are patent, into the abdominal cavity. The patient is then radiographed and the position and shape of the shadows shows whether the tubes are occluded or not. The method has the advantage over the more simple insufflation that it can show what insufflation cannot show—namely, whether one or both tubes are patent, and also in the event of occlusion, whether the block is at the inner or outer ostium. Such knowledge is, however, of little practical use because in a case of sterility in which investigation either by insufflation or lipiodol shows that though not normally patent a partial degree of patency exists, no operation is indicated, whereas if total occlusion is revealed either by one method or the other nothing less than an endeavour to open up the closed tubes is of any use.

The causes of tubal occlusion are various, first amongst them being salpingitis which may block the lumen at various points, the two most common sites being the inner and outer ostia. In some cases long lengths or even the whole length of the lumen may be obliterated. Next in importance is kinkage, the kinks most often affecting the narrow isthmic portion. They are easily overlooked if one relies merely on sight, but they show up immediately air is blown down the tube from the abdominal ostia. For this purpose I employ a special insufflator, consisting of a bulb to which is attached a nozzle that just passes through the outer ostium. An ophthalmic canaliculus-catheter can be screwed on to the nozzle if the operator wishes to pass the instrument into the narrow isthmic portion of the tube. If a tube is freely patent air can easily be squeezed down it into the uterus with a characteristic gurgle.

The commonest cause of tubal kinkage is retroversion, and this fact largely explains the frequency with which sterility is associated with it.

Finally, the tubes may be congenitally small and narrow so that air scarcely passes through them, or not at all.

Uterine segment.—The uterine cavity is so large that nothing short of a tumour of considerable size in its interior will suffice to block it. Of such tumours fibroids form the vast proportion. Besides occlusion of the uterine cavity by a fibroid these tumours may by the deformity they cause obstruct the tubo-uterine junction, and beyond this they are deterrent to conception for reasons at present unknown to us.

Sterility is often ascribed to the uterus being "infantile," but a moment's thought will show this to be an error, for the oösperm can graft in the isthmus of the tube which is far smaller than the smallest "infantile" uterus. That sterility often accompanies a small uterus is due to the fact that the tubes in such patients are often congenitally impervious, or only poorly pervious as I have proved by abdominal exploration on a number of occasions. Moreover, deficient development of the uterus is often accompanied by deficient development of the ovaries, though not by any means always so, for I have five times performed Baldwin's operation for congenital absence of the uterus and vagina, and in each of the patients the ovaries were conspicuously normal.

Cervical segment.—Absolute obstruction of the cervical canal is very rare, but undue narrowness is common. Dilatation of the cervix for the cure of sterility has been a standard operation for a great many years, though having regard to the small size of the sperm in relation even to the narrowest cervical canal it is difficult to see how it acts. That patients often become pregnant after it is not in itself proof of the efficacy of the procedure. Consider, for instance, the case of a healthy young woman of 26 married four years to a healthy young man and no baby yet. It is most unlikely that this girl will not sooner or later conceive without any interference. If it came to betting, none of us would like to wager against that event unless we could get exceptional odds. Nevertheless, the cervix is dilated and six months afterwards the patient conceives. She and her husband will be positive that it was the result of the operation. But are we to record a success?

Great elongation of the cervix may prevent pregnancy because the semen is deposited above it, but I am doubtful whether the tilting of the cervix that occurs in retroversion can have any material effect. Tumours of the cervix such as polyps or small fibroids must obviously act as obturators.

Vaginal segment.—The cavity of the vagina is so large that its total occlusion except by congenital defect is rare. The so-called "imperforate hymen" is the best known example of this. Narrowness of the vaginal entrance sufficient to prevent coitus is, on the other hand, extremely common. In a few cases this narrowness is entirely due to muscular spasm, but as a rule a real narrowness is the basis of the dyspareunia, the muscular spasm being secondary to the pain evoked by the attempted act.

The Site for Implantation.

It is generally considered that certain cases of sterility are due to the endometrium being structurally unsuitable for the oösperm to graft upon. When, however, we consider that grafting may occur into the substance of the ovary, the wall of the tube, and even the peritoneum itself, tissues differing profoundly not only from the endometrium but from one another, it seems difficult to believe that comparatively slight histological changes in the lining of the uterus could completely check the activities of the trophoblast. It seems to me more probable that the fault in these cases lies not with the structure of the endometria ie, but with a change in its secretion whereby it omes toxic to the oösperm.. Fertilisation of the cell normally takes place in the tube and the perm has already begun to grow and divide by the e it enters the uterus. Until it has grafted into endometrium its nutriment would appear to be ained from the tubal and uterine secretions, and can well imagine that these, if abnormal, might son instead of nourishing it. The matter is of ctical importance in regard to the question of the ity of curetting in cases of sterility.

Investigation.

n all cases of sterility with no obvious cause arent the husband should be examined both regards his physical condition and the state of semen. As regards this last, I feel sure that only reliable way is to do it microscopically his own house almost immediately after it been passed. A strictly scientific investi- or would then proceed to mix the semen with some the upper vaginal discharge collected in a pipette l watch the behaviour of the sperm under these ditions. This, however, is not usually done.

he woman must be investigated like any other æcological case by questioning and physical mination and, this completed, the tubal insuffla- n test should be carried out. I have already stated t in my opinion this should always be performed ler an anæsthetic, and the question therefore arises ether or not the surgeon should advise his patient let him proceed at once to abdominal section in event of the test indicating that both tubes are sed. It is important in this connexion to bear in d that failure to get air to pass along the tubes, ugh usually due to fixed conditions, may be endent on temporary causes, such as thickening the cornual endometrium, or even, it is said, scular spasm at the tubo-uterine junction. If her of these two latter conditions obtains it will found on opening the abdomen that air can be ced down the tube though it cannot be forced wards.

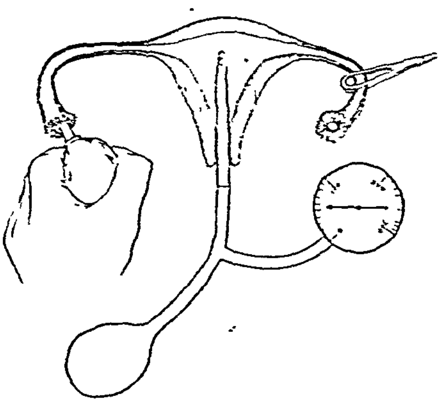
My experience of abdominal operations for sterility s taught me that blockage of this character is not mmon. but nevertheless in a case in which tubal nfflation indicates that both tubes are blocked, it is en advisable to repeat the test in a month and only oceed to open the abdomen if at this second time trying air still will not pass. Many women, though ey are anxious to have a child, do not desire it fficiently to make them willing to undergo an dominal operation for the sake of the possibility having one.

On the other hand, there are cases in which the esence of marked retroflexion, or uterine fibroids, a thickening in the region of the tubes, or a past story strongly pointing to salpingitis makes it practi- lly certain that the failure of air to pass is due to a ed condition, and in such repetition of the test is necessary before opening the abdomen.

Remedial Measures.

Reopening the tubes.—Surgical operations for the rpose of reopening closed tubes have only been actised of recent years, but they have already vealed a number of interesting facts with which næcology was previously unacquainted. The neral procedure is as follows: The patient first placed in the lithotomy position. the bal inflation apparatus is inserted, and the tency of the tubes tested. If air will not pass, the vagina is packed with sterile gauze so as to keep the hollow dilator in the uterus in position, and the patient being moved into the Trendelenburg posture, the abdomen is opened. The intestines having been packed off from the pelvis a self-retaining retractor is inserted and the tubes and ovaries, after being inspected and felt, are brought up into positions in which their whole length is plainly seen, adhesions being separated if necessary. A light forceps is now placed on one tube so as to occlude it. An assistant now squeezes the bulb of the insufflator in the uterus whilst the surgeon watches the effect on the unclamped tube. If it is patent the air is seen and heard to pass out of the abdominal ostia. If the abdominal ostium alone is closed the tubes swell up by the pressure of the imprisoned air. If the point of obstruction is further along the tube only that part on the uterine side of the obstruction swells. If the block is at the uterine ostium no change at all occurs in the tube. If the abdominal ostium is open the small bulb insufflator already described should now be inserted and air squeezed into the tube from above. If any air at all passes into the uterus the needle of the manometer attached to the insufflator in the uterus will be seen to rise, because the air forced into the uterine cavity can neither escape through the cervix blocked by the hollow dilator nor through the opposite tube blocked by the forceps. (Fig. 1.) I have already stated that if a tube is freely patent air forced down it can be heard and felt to pass into the uterus, but this is not the case in low degrees of patency which will be missed if insufflation from above is carried out without the insufflator in the uterus. The forceps compressing the opposite tube is then taken off and applied to the tube already tested and the proceedings described are then repeated on the untested side.

FIG. 1.

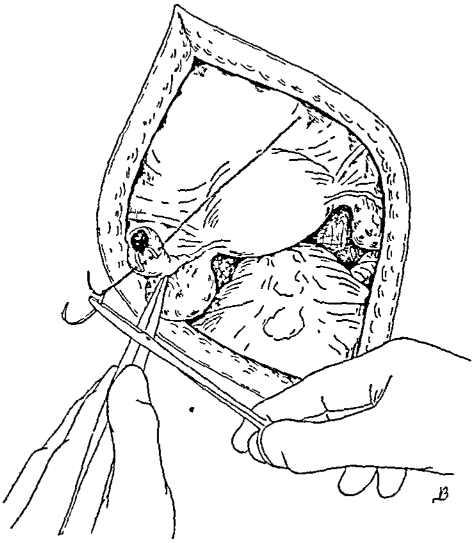


Showing how air blown into the tube from above registers on the manometer below.

Blockage at the abdominal ostium only is the easiest variety of obstruction to treat, requiring simple salpingostomy. The extremity of the tube should be separated from its attachment to the ovary by dividing the ovarian fimbria and the bulbous end slit sufficiently to allow of a cuff being turned back (like the cuff of a dressing-gown sleeve) and fastened so with a few fine catgut sutures. (Fig. 2.) Kinks are a more difficult problem, but usually by pulling them, aided by minute incisions through the peritoneal bands holding them, the tube can be straightened out and air got to pass.

Blockage at the uterine ostium requires for its satisfactory correction reimplantation of the tubes into the uterus. I have long given up trying to pass threads of catgut down the tube into the uterus, being certain that nine times out of ten a false passage is made. The technique of the operation, which I first performed in 1921, is as follows: I begin by arresting the blood flow through the uterus by placing my myomectomy clamp on its lower segment and ring forceps on each ovariopelvic ligament, the insufflator in the uterus having been first removed. One tube is now dissected out of its corresponding cornu and its patency tested by the small bulb insufflator. (Fig. 3.) If no air passes, a small piece of its inner end is cut off with scissors and the tube tested again. If still no air passes, another small piece is cut off and so on until air does pass. You then have a length of tube freely patent, and it is this that you are going to implant. The same proceedings are then carried out on the opposite side. The fundus of the uterus is now incised transversely from cornu to cornu until the cavity is opened. The inner end of each tube is now laid into its corresponding cornu and fastened there by fine catgut sutures (Fig. 4), after which the incision in the uterus is closed by interrupted catgut sutures. Finally, each tube is sutured to the outer surface of the uterus at the point where it passes into its substance.

FIG. 2.



Fixing the cuff in salpingostomy.

Whichever method be employed to open up the tubes, all adhesions round the ovaries should be cleared away, and in most cases it is advisable to raise the uterus and appendages out of the pelvis by shortening the round ligaments or ventrofixing the uterus. If the uterus is retroverted this should of course be done.

Removal of fibroids.—Fibroids causing sterility should be treated by myomectomy—an operation which occupies a very different position from what it did 20 years ago. It is now possible to conserve the uterus in almost every case, leaving an organ capable of child-bearing. The largest number of fibroids that I have removed from a uterus which subsequent to the operation bore a child is 32. I would refer those interested in the technique of this operation and its results as regards pregnancy to my Hunterian Lecture (THE LANCET, 1931, i., 171).

Dilatation of the cervix.—I am chary of ascribing results to an operation merely because they follow it; nevertheless, I am of opinion that dilatation of the cervix does favour conception though not with anything like the frequency commonly claimed. As quite a number of the young married women wanting children also suffer from "first day" dysmenorrhœa, dilatation often has a double advantage. Moreover, dilatation forms an essential part of tube insufflation which nowadays should always be performed in a case of sterility. To merely dilate the cervix and leave the tubes untested is inadequate practice.

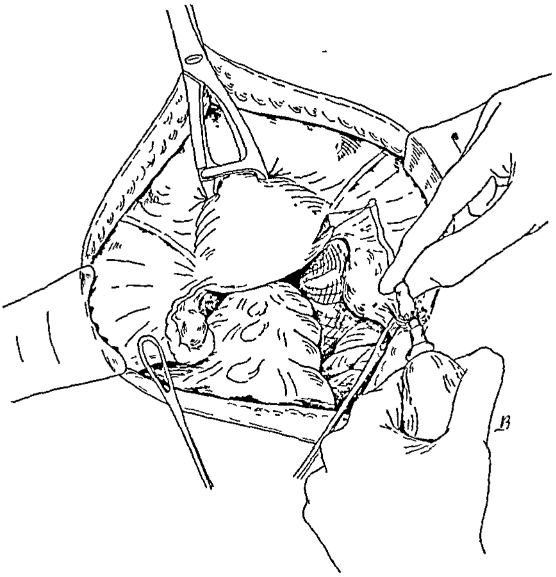
Curettage.—Unless there are symptoms such as menorrhagia indicative of endometrial abnormality, I see no object in curetting the uterus.

Tubal insufflation as a cure.—It is believed by some that insufflating the tubes increases the likelihood of a woman becoming pregnant. The only apparent ground for this belief is the fact that women sometimes conceive shortly after insufflation. From a now-extensive experience in viewing the actual condition of the tubes in cases of sterility I am of opinion that it is impossible except perhaps in very rare instances. Patients, of course, accept the association.

Enlargement of the vaginal orifice.—In some cases the failure to conceive is due to imperfect penetration during intercourse. In nearly all of them the vaginal orifice is unduly narrow and rigid and the pain evoked produces a quite natural resistive spasm which increases the difficulty. Women of this type are frequently hypersensitive and overstrung, but it is a mistake to regard the dyspareunia as of purely nervous origin. I have long given up merely stretching the parts under an anæsthetic. It does little or no good as a rule and the failure only increases the patient's concern. The orifice should be deliberately enlarged by a plastic operation. I know few operations that more uniformly yield a happy result.

Stimulating the ovaries.—The fact that the ovaries are not producing egg-cells can only be proved by inspection through an abdominal incision. It may be surmised, however, when a woman normal on physical examination and whose tubes have been proved to be patent fails to conceive though her partner is a perfectly normal man. Even in such, however, relative infertility, loss of the egg-cell during its transperitoneal passage, or very early death of the oösperum, are equal possibilities. Modern research teaches that the ovaries in certain animals are under the influence of two hormones secreted by the anterior lobe of the pituitary gland, and that

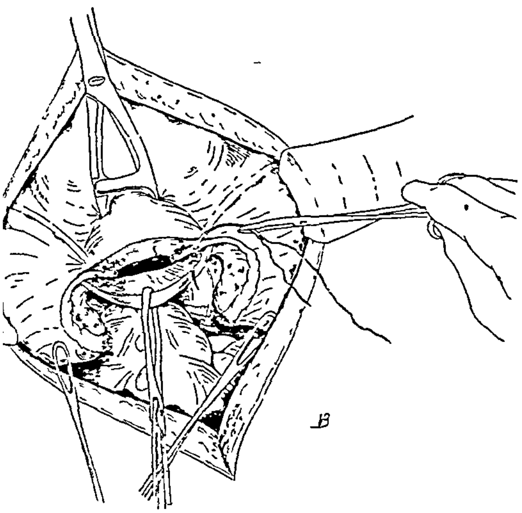
FIG. 3.



Implanting the tubes. Testing the separated tube.

of these administered experimentally greatly 'eases the ovulating function of the ovary. Of ınt years it has become common practice to treat :ile women by various endocrine extracts in the ›e that they will stimulate the ovaries to produce

FIG. 4.



mplanting the tubes. Fixing the tubes into the uterus.

›t only "bigger and better" egg-cells, but more of ıem. Biochemists have succeeded in obtaining ıese hormones in purity sufficient to give definite sults when administered to certain animals, but it is a ng cry from rats and mice to human beings, and there no evidence at all that these extracts produce any fects on women. One reason perhaps is the fact :cently stated by an expert worker in this field that dequate dosage of a woman with hormones of proved ctivity would cost several thousand pounds! 'regnancy sometimes follows the administration of ndocrine extracts just as it does after mud-baths, pa treatment, or suggestion, but let us be on our uard against that credulity which we so readily ecognise when it is lay but only perceive with effort vhen it is professional.

Altering the vaginal discharge.—Our knowledge oncerning the effect of abnormal uterine or vaginal lischarge on the sperm is very imperfect. It is said hat a highly acid state of these discharges is inimical, ınd on that ground frequent. and large alkaline rrigations of the vagina are advised. Until some 'eliable scientific work on this subject is carried ›ut measures of this sort are more or less empirical. They do not, however, do any harm.

Artificial insemination.—The sperms are not naturally injected into the uterus; they find their way of their own accord. The only condition I can imagine in which direct deposition into the uterus would be helpful is when the vaginal discharge ıs toxic to the sperm but the uterine discharge is not. The great drawback to artificial insemination of the uterus is the infrequency with which it can be carried out. A married couple who only had relations once every six months would probably have to wait a long time before having a child. To my mind a far better procedure is injection of the semen into the upper vagina by means of a syringe. The husband and wife should be instructed how to do this by themselves, so that it can be carried out frequently.

STONES IN THE COMMON BILE-DUCT.*

BY R. P. ROWLANDS, O.B.E., M.S. LOND.,
SURGEON TO GUY'S HOSPITAL; VICE-PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THIS lecture is based upon 116 operations (choledochotomies) for stones in the common bile-duct performed by myself during the last 20 years; 61 of these were at Guy's Hospital and 55 in my private practice.

With rare exceptions gall-stones form only in the gall-bladder where the bile becomes very greatly concentrated by absorption. In the course of time they may migrate to other parts, especially into the common bile-duct. But only the smallest stones can pass through the normal cystic duct, whose channel is very narrow—only one-tenth of an inch in diameter—and tortuous from valvulation of its mucosa. For larger stones to pass, the cystic duct has to dilate as a result of chronic inflammatory softening and repeated attacks of colic. Therefore, in the large majority of cases cholelithiasis can be cured by cholecystectomy long before the common bile-duct becomes affected. Jaundice and cholangitis due to gall-stones can be thus prevented, and this is very desirable because operations upon the common duct, especially in the presence of jaundice and infection, are very far more dangerous than removal of the gall-bladder in early cases.

It is curious that many medical men still believe that jaundice is almost a necessary sign of gall-stones, whereas in reality it is a rare and late sign. Only one-fifth of my 666 cases of gall-stones had calculi in the common bile-duct, and by no means all of these had jaundice. Stones may lie in the common bile-duct for years without obstructing enough to cause jaundice—attacks of complete obstruction and colic, if any, being often of short duration. This fallacy too frequently leads to deplorable delay in the diagnosis of gall-stones, and condemns some patients to many years of unnecessary suffering, and allows dangerous complications, especially infection and jaundice, to develop.

Some of these avoidable complications may be mentioned in more detail: (1) Chronic, acute, suppurative, and gangrenous cholecystitis, with perforation causing local or diffuse peritonitis. (2) Chronic septicæmia; portal pyæmia. (3) Jaundice with infective or suppurative cholangitis. (4) Pancreatitis, acute, subacute or chronic. (5) Cancer[1] of the gall-bladder or bile-ducts, which develops in at least 5 per cent. of all cases of gall-stones. (6) Osteo-arthritis. (7) Cardiac degeneration. (8) Cerebral toxæmia, occasionally causing insanity.

Diagnosis.

The diagnosis of stones in the common bile-duct depends chiefly upon the association of repeated attacks of typical biliary colic, with jaundice of an intermittent or remittent type. Rarely is there any enlargement of the gall-bladder, as Courvoisier pointed out many years ago. Occasionally there may be no colic, this being replaced by intolerable nausea, with faintness and perhaps shivering. Sometimes jaundice is absent because the attacks of obstruction are not long enough to cause it. Here van den Bergh's test for bile-pigment in the blood is of great value. Naunyn pointed out that the duration of jaundice

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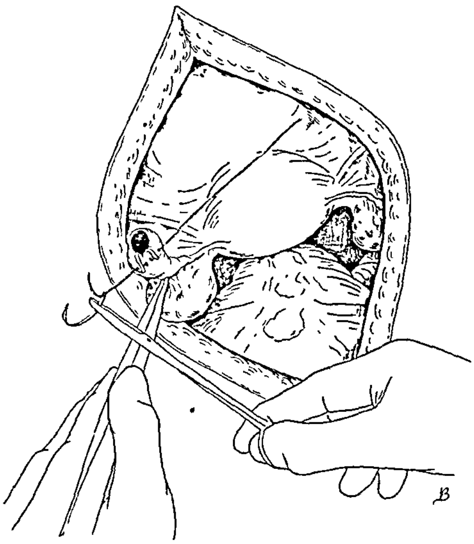
* A Clinical Lecture delivered at Guy's Hospital.

first performed in 1921, is as follows: I begin by arresting the blood flow through the uterus by placing my myomectomy clamp on its lower segment and ring forceps on each ovariopelvic ligament, the insufflator in the uterus having been first removed. One tube is now dissected out of its corresponding cornu and its patency tested by the small bulb insufflator. (Fig. 3.) If no air passes, a small piece of its inner end is cut off with scissors and the tube tested again. If still no air passes, another small piece is cut off and so on until air does pass. You then have a length of tube freely patent, and it is this that you are going to implant. The same proceedings are then carried out on the opposite side. The fundus of the uterus is now incised transversely from cornu to cornu until the cavity is opened. The inner end of each tube is now laid into its corresponding cornu and fastened there by fine catgut sutures (Fig. 4), after which the incision in the uterus is closed by interrupted catgut sutures. Finally, each tube is sutured to the outer surface of the uterus at the point where it passes into its substance.

FIG. 2.



Fixing the cuff in salpingostomy.

Whichever method be employed to open up the tubes, all adhesions round the ovaries should be cleared away, and in most cases it is advisable to raise the uterus and appendages out of the pelvis by shortening the round ligaments or ventrofixing the uterus. If the uterus is retroverted this should of course be done.

Removal of fibroids.—Fibroids causing sterility should be treated by myomectomy—an operation which occupies a very different position from what it did 20 years ago. It is now possible to conserve the uterus in almost every case, leaving an organ capable of child-bearing. The largest number of fibroids that I have removed from a uterus which subsequent to the operation bore a child is 32. I would refer those interested in the technique of this operation and its results as regards pregnancy to my Hunterian Lecture (THE LANCET, 1931, i., 171).

Dilatation of the cervix.—I am chary of ascribing results to an operation merely because they follow it; nevertheless, I am of opinion that dilatation of the cervix does favour conception though not with anything like the frequency commonly claimed. As quite a number of the young married women wanting children also suffer from "first day" dysmenorrhœa, dilatation often has a double advantage. Moreover, dilatation forms an essential part of tube insufflation which nowadays should always be performed in a case of sterility. To merely dilate the cervix and leave the tubes untested is inadequat practice.

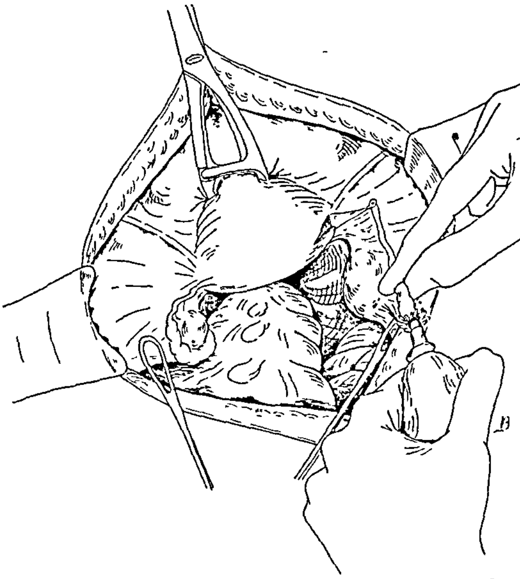
Curettage.—Unless there are symptoms such a menorrhagia indicative of endometrial abnormality I see no object in curetting the uterus.

Tubal insufflation as a cure.—It is believed by some that insufflating the tubes increases the likelihood of a woman becoming pregnant. The only apparent ground for this belief is the fact that women sometimes conceive shortly after insufflation. From a now-extensive experience in viewing the actual condition of the tubes in cases of sterility I am of opinion that it is impossible except perhaps in very rare instances. Patients, of course, accept the association.

Enlargement of the vaginal orifice.—In some cases the failure to conceive is due to imperfect penetration during intercourse. In nearly all of them the vaginal orifice is unduly narrow and rigid and the pain evoked produces a quite natural resistive spasm which increases the difficulty. Women of this type are frequently hypersensitive and overstrung, but it is a mistake to regard the dyspareunia as of purely nervous origin. I have long given up merely stretching the parts under an anæsthetic. It does little or no good as a rule and the failure only increases the patient's concern. The orifice should be deliberately enlarged by a plastic operation. I know few operations that more uniformly yield a happy result.

Stimulating the ovaries.—The fact that the ovaries are not producing egg-cells can only be proved by inspection through an abdominal incision. It may be surmised, however, when a woman normal on physical examination and whose tubes have been proved to be patent fails to conceive though her partner is a perfectly normal man. Even in such, however, relative infertility, loss of the egg-cell during its transperitoneal passage, or very early death of the oösperum, are equal possibilities. Modern research teaches that the ovaries in certain animals are under the influence of two hormones secreted by the anterior lobe of the pituitary gland, and that

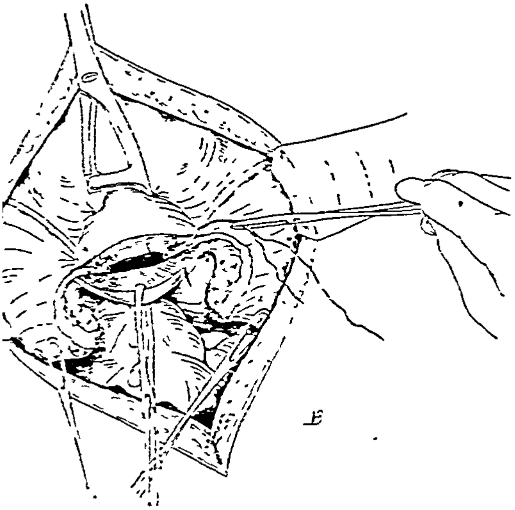
FIG. 3.



Implanting the tubes. Testing the separated tube.

of these administered experimentally greatly ases the ovulating function of the ovary. Of nt years it has become common practice to treat ile women by various endocrine extracts in the e that they will stimulate the ovaries to produce

FIG. 4.



planting the tubes. Fixing the tubes into the uterus.

only "bigger and better" egg-cells, but more of m. Biochemists have succeeded in obtaining e hormones in purity sufficient to give definite ults when administered to certain animals, but it is a g cry from rats and mice to human beings, and there no evidence at all that these extracts produce any ects on women. One reason perhaps is the fact ently stated by an expert worker in this field that equate dosage of a woman with hormones of proved tivity would cost several thousand pounds! egnancy sometimes follows the administration of docrine extracts just as it does after mud-baths. a treatment, or suggestion, but let us be on our ard against that credulity which we so readily cognise when it is lay but only perceive with effort hen it is professional.

Altering the vaginal discharge.—Our knowledge ncerning the effect of abnormal uterine or vaginal scharge on the sperm is very imperfect. It is said at a highly acid state of these discharges is inimical, d on that ground frequent, and large alkaline rigations of the vagina are advised. Until some liable scientific work on this subject is carried ut measures of this sort are more or less empirical. hey do not, however, do any harm.

Artificial insemination.—The sperms are not aturally injected into the uterus; they find their ay of their own accord. The only condition I an imagine in which direct deposition into the terus would be helpful is when the vaginal discharge toxic to the sperm but the uterine discharge is not. he great drawback to artificial insemination of the terus is the infrequency with which it can be carried ut. A married couple who only had relations once very six months would probably have to wait a ong time before having a child. To my mind a ar better procedure is injection of the semen into he upper vagina by means of a syringe. The usband and wife should be instructed how to do this by themselves, so that it can be carried out requently.

STONES IN THE COMMON BILE-DUCT.[*]

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THIS lecture is based upon 116 operations (choledochotomies) for stones in the common bile-duct performed by myself during the last 20 years; 61 of these were at Guy's Hospital and 55 in my private practice.

With rare exceptions gall-stones form only in the gall-bladder where the bile becomes very greatly concentrated by absorption. In the course of time they may migrate to other parts, especially into the common bile-duct. But only the smallest stones can pass through the normal cystic duct, whose channel is very narrow—only one-tenth of an inch in diameter—and tortuous from valvulation of its mucosa. For larger stones to pass, the cystic duct has to dilate as a result of chronic inflammatory softening and repeated attacks of colic. Therefore, in the large majority of cases cholelithiasis can be cured by cholecystectomy long before the common bile-duct becomes affected. Jaundice and cholangitis due to gall-stones can be thus prevented, and this is very desirable because operations upon the common duct, especially in the presence of jaundice and infection, are very far more dangerous than removal of the gall-bladder in early cases.

It is curious that many medical men still believe that jaundice is almost a necessary sign of gall-stones, whereas in reality it is a rare and late sign. Only one-fifth of my 666 cases of gall-stones had calculi in the common bile-duct, and by no means all of these had jaundice. Stones may lie in the common bile-duct for years without obstructing enough to cause jaundice—attacks of complete obstruction and colic, if any, being often of short duration. This fallacy too frequently leads to deplorable delay in the diagnosis of gall-stones, and condemns some patients to many years of unnecessary suffering, and allows dangerous complications, especially infection and jaundice, to develop.

Some of these avoidable complications may be mentioned in more detail: (1) Chronic, acute, suppurative, and gangrenous cholecystitis, with perforation causing local or diffuse peritonitis. (2) Chronic septicæmia; portal pyæmia. (3) Jaundice with infective or suppurative cholangitis. (4) Pancreatitis, acute, subacute or chronic. (5) Cancer[1] of the gall-bladder or bile-ducts, which develops in at least 5 per cent. of all cases of gall-stones. (6) Osteo-arthritis. (7) Cardiac degeneration. (8) Cerebral toxæmia, occasionally causing insanity.

Diagnosis.

The diagnosis of stones in the common bile-duct depends chiefly upon the association of repeated attacks of typical biliary colic, with jaundice of an intermittent or remittent type. Rarely is there any enlargement of the gall-bladder, as Courvoisier pointed out many years ago. Occasionally there may be no colic, this being replaced by intolerable nausea, with faintness and perhaps shivering. Sometimes jaundice is absent because the attacks of obstruction are not long enough to cause it. Here van den Bergh's test for bile-pigment in the blood is of great value. Naunyn pointed out that the duration of jaundice for more than a year is in favour of stone, but I have seen jaundice due to carcinoma at the duodenal papilla last nearly two years. Shivering, with fever and rigors, complicating jaundice and colic, indicates infective or suppurative cholangitis. These attacks often recur and are very suggestive of stones in the common bile-duct, but they have too often been attributed to malaria.

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[*] A Clinical Lecture delivered at Guy's Hospital.

I have known other obstructions of the bile-ducts mistaken for gall-stones, such as :—

(1) Organising blood clot[2]
(2) Small hydatid daughter cyst
(3) Round-worm
(4) Papilloma
(5) Papillary carcinoma
} in the common bile or common hepatic duct.

(6) Carcinoma of the common hepatic duct. Here there is no enlargement of the gall-bladder, which makes it resemble stone in the common bile-duct, especially as it often causes severe pain.

(7) Carcinoma of the head of the pancreas. Chronic pancreatitis. Hydatid cysts, aneurysm, tumours or other things pressing on the common bile-duct. These cause enlargement of the gall-bladder and of the liver.

(8) Carcinomata at or near the duodenal papilla or of the ampulla of Vater have all given trouble in diagnosis ; but with all of these the jaundice is chronic and rarely remittent. With cirrhosis of the liver the jaundice is continuous, although not severe, and the pain is that of peri-hepatitis and not typical biliary colic. The history, when not concealed, and the facial appearance, may be characteristic of cirrhosis of the liver. The jaundice of carcinoma of the liver, acute yellow atrophy, and other forms of toxic jaundice, have been mistaken for that due to stones in the common bile-duct.

Indication for Operation.

When the symptoms and signs point strongly to the presence of calculous obstruction of the common bile-duct, an operation is indicated whenever the condition of the patient allows it, for there is very little hope of cure by medical treatment or by waiting, although the stone sometimes at long last ulcerates through and is discharged into the duodenum.

But it is usually wise to defer operation until the quiet period—i.e., until jaundice and especially fever have abated. Operations upon the common duct are much safer when undertaken in the quiet period, but when colic and jaundice continue indefinitely without remission it is necessary to operate without waiting too long for a quiet period, before the patient has wasted unduly and has become unusually liable to bleed or to become comatose after operation.

Occasionally a stone firmly impacted in the common bile-duct causes sloughing and perforation of the duct with local or even diffuse peritonitis. When the cause of chronic jaundice is uncertain it is generally wise to explore, and I have often been rewarded in such cases by finding one or more stones in the common bile-duct. Moreover, if no stone, but some irremovable cause of obstruction is found, a cholecyst-gastrostomy can be made to overcome the jaundice and the intolerable itching and anorexia which make the patient so unhappy and always shorten his life.

It is very rarely wise to allow many repetitions of biliary colic with jaundice, although it may be reasonable to hold the hand after the first attack in the hope that the only stone has passed and that no more may develop. After every fresh attack spontaneous cure becomes more and more improbable, because common duct stones inevitably and often rapidly increase in size, and become naturally more difficult to pass through the duodenal orifice of the duct, which is only one-twelfth of an inch in diameter. Moreover, more or less septic infection of the ducts and liver frequently follows and leads to serious loss of liver function, with marked increase of the mortality after delayed operation.

Treatment.

MEDICAL.[3]

Although medical treatment rarely if ever cures calculous obstruction of the common bile-duct, it is indispensable and invaluable in relieving biliary colic, which by common consent is one of the worst of all pains. Morphia and atropine soon give miraculous, if only temporary, relief, and are a godsend to patients who have for any reason to wait for a cure by operation. Antiseptic treatment of the biliary tract by hexamine, salicylates, and sulphates is also valuable as a preliminary preparation to operation. Glucose and hæmostatics are also valuable safeguards when the risk of cholæmia or of hæmorrhage are serious in late or neglected cases.

OPERATIVE.

After the most careful preparation of the patient, to make her safer for operation, the abdomen is rapidly explored through a right paramedian incision in the epigastrium, and after a general survey especial attention is given to the liver, biliary tract, and pancreas. Sometimes it is necessary to remove a septic appendix, and frequently it is necessary to deal with stones in the gall-bladder and cystic duct, but nothing is done until the bile-ducts have been carefully palpated for stone.

(1) *Supraduodenal choledochotomy.*—Any stone found in the lower part of the duct is backed into the supraduodenal part of the common duct, where it is fixed, by the left index-finger passed into the foramen of Winslow, until it is removed through a longitudinal incision in a bloodless part of the duct well above the duodenum. A large lead probe is then passed through the duct into the duodenum, and also into the right and left hepatic ducts. Great patience is required to find and to remove all the stones and debris from the ducts, which often have to be cleaned with strips of gauze passed up and down.

Whenever there is reasonable doubt about the presence of a stone in the common bile-duct, an opening must be made into the duct and the passage must be proved to be clear by passing the large probe through the papilla into the duodenum. It should never be forgotten that stones may be present in the common duct for years without causing either dilatation of the duct or jaundice. At my first cholecystectomy I overlooked a small faceted solitary stone in a normal looking common duct. There was no history of jaundice. There were 99 stones in the gall-bladder and cystic duct, and I thought I had done well for the patient; but she had repeated attacks of biliary colic without jaundice during the next four years, and then another operation was at last accepted and proved entirely and permanently successful.

(2) *Retroduodenal choledochotomy.*—When a stone in the second part of the common duct cannot be backed into the first part it has to be removed by incising the duct directly over the stone after dividing the posterior peritoneum to the right of the second part of the duodenum, mobilising the latter and turning it forwards and inwards. More bleeding often attends this operation and it is more difficult to explore all the ducts satisfactorily.

(3) *Transduodenal choledochotomy.*—In a few cases a stone cannot be dislodged by reasonable force from the lower end of the common bile-duct. Even the passing of the probe fails to push the stone through into the duodenum. Then the transduodenal operation is necessary and generally proves very successful. A longitudinal incision is made directly over the

ne through the anterior wall of the duodenum ; en the papilla or duct is incised over the stone, which removed, and the incision in the front wall of the odenum is very carefully closed in reverse without rrowing the bowel ; two layers of fine catgut tures are used and a peritoneal flap is brought up om the mesocolon and sewn over the wound. I ve never seen any leakage after this operation. ter every choledochotomy I insert a fine rubber be (No. 10 rubber catheter) into the common ct and fix it there with a fine catgut suture. Failure do this may lead to disastrous leakage of infected le into the peritoneum.

In one of my cases the lesser sac filled with bile, hich I had to evacuate and drain at a second opera- on. In another case closure of the duct by suture as followed by return of colic, due to organising ood clot within the duct, which required a second eration ten days later. I also insert a larger ibber tube in Morison's pouch ; this I remove after vo or three days. The catheter becomes loose and removed after a week or ten days, and the wound pidly closes without any leakage of bile for more an two or three days.

Prognosis.

Mortality.—In my 116 cases of choledochotomy e death-rate was 12 per cent. Graham and Cole [4] cord 42 cases with a mortality of 11·9 per cent. any of these cases are seen too late for the best sults to be obtained. The mortality ought not to above 5 per cent. if the patients come reasonably rly ; whereas it is as high as 35 per cent. in late ses with infective cholangitis and perhaps pancrea- tis. A mortality of 12 per cent. in these 116 cases mpares very unfavourably with that of 1·6 per cent. my concurrent 434 cases of cholecystectomy. ther bad and late cases, with suppuration in and bout the gall-bladder, were treated by cholecys- stomy. By a coincidence there were 116 of these ith a mortality of 18 per cent.

From these figures it will be seen that I found holedochotomy necessary in 116 out of 666 conse- utive cases of gall-stones operated upon by me. lany of the deaths were chiefly due to delay, and ould have been avoided by early cholecystectomy.

Ultimate results.—In my experience, recurrence f gall-stones after choledochotomy is very rare, lthough symptoms of cholangitis sometimes continue r recur. I have not yet seen true recurrence of all-stones after cholecystectomy, but I have ccasionally found stones in the common duct which ad been overlooked when the gall-bladder was emoved.

Illustrative Cases.

CHOLECYSTECTOMY AND CHOLEDOCHOTOMY.

CASE 1.—A lady, aged 57, gave a history of five attacks f biliary colic during 1913 and 1914. Afterwards she was ell for 14 years, but in 1927 the attacks returned and were t first diagnosed as pseudoangina. In 1928 there were hree more definite attacks. In February, 1930, she eveloped right-sided pleurisy. Five days later a typical nd severe attack of biliary colic developed. Meanwhile here was a loud rub over the lower half of the right lung. he patient was laid up for weeks, but gradually recovered. n June 3rd a very severe attack of typical biliary colic tarted at 8 P.M. ; an injection of gr. ¼ of morphia was given, ut the patient did not sleep all night and had several igors. Next day there was marked tenderness over the all-bladder, which was felt. There was no jaundice. The emperature was raised and remittent for five days. holecystectomy was advised but the patient preferred o wait. She was ill for some weeks with irregular fever nd rheumatism in the shoulders and hands. She lost a tone in weight.

When I saw her for the first time in July, 1930, the liver was somewhat enlarged and the gall-bladder was palpable and tender. There was a moderate degree of jaundice.

Operation, July 17th. Kocher incision. The appendix appeared normal and was left alone, especially as there were stones in the common bile-duct as well as in the gall-bladder, and the patient was very ill. The stomach and duodenum were normal. The gall-bladder was chronically inflamed, thick-walled and shortened, drawing the front edge of the liver downwards and backwards, kinking it. The gall-bladder was very adherent to the front of the duodenum ; the adhesions were divided and tied. The common bile-duct was opened above the duodenum and 15 stones were removed from it and the common hepatic duct, a mass of them being impacted in the latter ; they were all made of cholesterin ; three were withdrawn from the common bile-duct low down, and some from the hepatic ducts. The large probe and scoop were passed through the papilla into the duodenum to dilate the orifice thoroughly. The gall-bladder was very adherent and embedded in the liver ; its fundus was shelled out, but a diverticulum extending downwards along the common bile-duct was so very adherent that some of it was left behind because of the danger to the main duct. In all, about 100 stones were removed. A tube was sewn into the common duct, and another large tube drained the kidney pouch. The operation lasted 1 hour and 20 minutes ; the patient stood it well and made a slow but complete recovery. She has remained quite well now for over 18 months.

CASE 2.—A man, aged 65, was sent to me in July, 1927. He had had severe kyphosis of the spine since the age of 20, when he was laid on his back for three years. When he was 30 he passed six gall-stones after suffering much from biliary colic. After this he was well for years, but the symptoms returned in 1922, when cholecystostomy was performed and 16 stones were removed from the gall-bladder. A fæcal fistula followed for some weeks and he was very ill. The symptoms returned a year later with more severe colic, dyspnœa, and præcordial pain resembling angina pectoris. I advised operation, but the patient waited until he became worse and jaundice had developed in March, 1929. An operation was performed during a remission. He was a tall, thin man, suffering from bad, rigid spinal curvature, so that his liver was drawn high up into the chest, and was very difficult of access.

Operation, April 10th. Kocher incision ; large ventral hernia ; a mass of dense adhesions in the right hypochondrium. With difficulty these were separated and the duodenum and stomach and liver identified. A small fibroid gall-bladder containing small calculi was found and used as a tractor, and thus the common bile-duct was traced ; it was dilated and thick-walled. No stone could be felt in it until it was opened, when a large amount of pale bile containing debris of stone escaped. On passing the index-finger down, a small stone was felt low down and was removed with the greatest difficulty by the supraduodenal route. A large lead probe was passed through the duct into the duodenum. The stone, which was a little larger than a pea, had been impacted at the duodenal papilla The operation took a long time—about one and a half hours—and the patient lost a good deal of blood, but his pulse was good at the end of the operation. He made a slow but complete recovery and has remained well for nearly three years.

Conclusions.

Infective inflammation of the gall-bladder is very common, and is difficult to cure medically. It often causes gall-stones, and sometimes cancer, to form in the gall-bladder or bile-ducts.

Timely radical operation has a low mortality, and offers a very good chance of cure. Delay often leads to serious and dangerous consequences. The results of operations upon the gall-bladder and bile-ducts are extremely satisfactory, and compare favourably with those obtained in any other branch of surgery. They will become still more satisfactory and even safer when patients come for operation before serious consequences, such as jaundice and suppuration, have developed.

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INCREASED CARBOHYDRATE IN THE TREATMENT OF DIABETES MELLITUS.

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(*From the Diabetic Clinic of the Hospital.*)

THE vast improvement in the treatment of diabetes is one of the most striking features of the last decade in medicine; this improvement is frequently attributed entirely to the introduction of insulin, and assuredly insulin has been the means of saving innumerable lives and of restoring to full health and vigour many who but for it would have had to look forward to a short life of invalidism and semi-starvation. Even before the introduction of insulin, however, F. N. Allan, who may be regarded as the father of the modern treatment of diabetes, had laid down the general principles which, even without the discovery of insulin, would have revolutionised the management of diabetes and which actually constitute the basis of present-day treatment.

By removing variable proportions of the pancreas of dogs, Allan and his co-workers produced diabetes of varying severity. In a mild case thus experimentally produced they found that, by careful dieting and by keeping the animal in a state of under-nutrition, it was possible to hold the diabetic condition in check. If, however, the animal thus brought to equilibrium were permitted to eat all the food it fancied, the experimentally produced diabetes progressed rapidly to a fatal issue. Given just sufficient islet tissue to deal with the minimal glucose requirements of the animal and presented with that minimum only, the pancreas would carry on; faced with more glucose than it could deal with, the islet tissue rapidly degenerated, and a frank diabetic condition supervened and progressed rapidly to a fatal issue.

Thus was developed the principle of pancreatic rest; islet tissue only just up to requirements may serve its owner so long as it is not overworked; overwork it and it will collapse altogether. Before the introduction of insulin the only known means of inducing pancreatic rest was starvation or under-nutrition. The degree to which these can be pushed is limited and it is, on the face of it, undesirable to starve an already wasted subject; moreover, even in the healthy subject starvation leads to the breakdown of stored fat and rapidly gives rise to ketosis with its attendant evils. None the less, starvation is a valuable means of resting the pancreas; by means of preliminary starvation and thereafter a diet below the actual metabolic requirements it was possible, even before the days of insulin, to retain in reasonable health, albeit in a state of subnormal vigour, numbers of diabetics who would otherwise have early succumbed to their disorder.

Starvation in the treatment of diabetes is not now necessary nor is under-nutrition actually desirable. By means of the judicious use of insulin it is possible to rest the pancreas without recourse to either of these measures. In the past the value of insulin in this respect has not been sufficiently realised. By the time that insulin was introduced, the general dietetic principles of Allan had been so firmly established that insulin was used merely as an adjunct to the dietetic treatment. Preliminary starvation was enforced until the blood-sugar became normal, and the diet was then slowly stepped up until it became evident that the carbohydrate tolerance had been reached. At this stage, and not before, insulin introduced into the treatment. There was and is a general feeling that once insulin has been intr duced into the management of a case its use mus be maintained throughout life. This is far fror being so. The early and free use of insulin as means of securing pancreatic rest brings the cas under control quickly and easily and without dange of ketosis; in the milder cases its use may be droppe as the glucose tolerance increases; in all cases th size of the dose necessary at the commencement treatment always greatly exceeds that on which th case finally becomes stabilised. The use of insul tends to reduce ketosis; starvation to produce i On these grounds alone it is preferable to secu pancreatic rest by means of insulin rather than b starvation.

INSULIN TO REDUCE THE LOAD ON THE PANCREAS.

Simple rest, however, does not constitute th whole of the treatment of diabetes; the pancrea rested, and with some of its function restored, mu not thereafter be overworked; it is as a means taking some of the load from the pancreatic isl tissue that insulin has been almost solely used the past, and its importance in this direction remai undiminished. In the past, however, there h undoubtedly been a failure to take full advantage the possibilities offered by insulin in this respect.

The diets in use as a result of the work of All at the time of the introduction of insulin most allowed carbohydrate, protein, and fat in the appro mate proportions of 50, 50, and 150. So long as diet conformed to Woodyate's formula that F shou not exceed 2C plus ½P it was considered that k would not develop, and in many instances pa did well on such diets either with or without insuli in fact, so enormous was the improvement over previous forms of treatment that for a time it [illegible] that nothing better could be found. As, howe the potency of insulin was fully realised, there w questioning as to whether the low-carbc [illegible] fat diets introduced as a result of Allan's work we really the best that could be devised, and the [illegible] the inquiry is pushed the more evident it becom that they are not.

Allan's original work on dogs was done [illegible] insulin; he realised that excess of fat in the [illegible] tended to some extent to reduce the tolerance f glucose, but fat in large amounts had to be inclu in the diet because it offered the only means providing the necessary calories above those [illegible] available by the metabolism of glucose, and of [illegible] the amount, whether elaborated from carboh [illegible] or protein, had to be strictly limited. On clinic grounds it has now become evident that with t intelligent use of insulin strict limitation of carb hydrate is neither necessary nor desirable. It is matter of experience that on adequate insulin dosa the patient who is not slavishly observant of his di often does rather better than the one who adher strictly to the letter of the doctor's word. Patien on a diet just conforming to Woodyate's formula many instances show a tendency to develop son degree of ketosis—and no diabetic can be regard as satisfactorily under control who shows acetone the urine. More free-and-easy patients who exce their diet in moderation—and when this is the ca it is practically always to the carbohydrate ratio that the addition is made—may escape acetonur even though some degree of glycosuria develop, an it is a matter of common observation that the diabet with a little sugar in the urine feels and actually is er health than his fellow who is free of glycosuria has acetonuria.

hese considerations have led within the last few rs to a considerable increase in the carbohydrate decrease in the fat ration of the diabetic. Ever e the introduction of insulin it has been recognised t by its use in sufficient amount it is possible to ance almost any amount of carbohydrate in the betic diet. It was, however, widely assumed that increase in the carbohydrate of the diet would essitate a proportional increase in the insulin age, and the average *patient greatly prefers* to up with a low carbohydrate intake rather than increase the bulk and the number of his daily lin injections. Experience has shown that the mption that increase in carbohydrate necessitates roportional increase in insulin dosage is entirely e. It has been widely held that one unit of lin may be regarded as approximately sufficient bring about the metabolism of one gramme of ose, and within very wide limits this is *true* ugh for the first 15 or 20 units of the dosage. reafter, however, it is found that increasingly e amounts of carbohydrate may be added to diet with only relatively small increase in the lin dosage. Thus, after the first 15 or 20 units of lin, a further 10 may be sufficient to enable the ent to deal with another 30 g. of carbohydrate, the addition of a further 30 g. of carbohydrate the diet may only necessitate a further 5 or 10 ts of insulin.

aking advantage of these facts, it is possible to duce almost any desired amount of carbohydrate the diet and to diminish the fats accordingly. merica, where meat-eating is apparently regarded something of a crime and where carbohydrates to bulk more largely in the diet than they do in country, recognition of these possibilities has the inclusion *of very large amounts*—up to 300 350 g.—of carbohydrate in the diabetic diet. certain cases, particularly in growing children, a régime has had very striking results. It is erally admitted, however, that with such diets insulin requirements are what would be regarded large in this country. A dosage of 100 units daily not unusual, and more frequent dosage is necessary. ghly concentrated insulin is more generally available America than in this country, so that the actual lk of insulin required on these very high carbodrate diets is not excessive; the frequency of osage, to which the American patient apparently oes not take exception, constitutes in this country distinct objection. None the less there undoubtedly re cases, particularly in children, in which very igh carbohydrate diets may be used with distinct dvantage.

In this country the average patient is happy on a carbohydrate intake considerably below *300 g.* Amounts of from 150 to 250 g. will satisfy most individuals, and *by the judicious use of insulin* these may readily be included in the diabetic diet.

THE REGIMEN OF THE HIGH CARBOHYDRATE DIET.

In the treatment of a case with higher carbohydrate diet, insulin must be used freely in the early stages; one hundred or more units per day may be required and the doses may have to be given four times in the twenty-four hours—even more frequently if there is any danger of coma. At the onset of treatment, no matter what the state of the patient, the carbohydrate content of the diet should be at least *100 g.*; *if the general condition is* bad this may be given in the form of glucose solution flavoured with fruit juice. If insulin be used boldly and freely in the early stages of treatment, there need be no fear but that it will be possible very considerably to decrease the dose as improvement occurs. It is the aim of the writer, no matter what the size or frequency of the initial insulin dosage, ultimately to reduce it to one dose daily, to be taken in the morning. In many cases this becomes possible, but only when the insulin requirement is at or below 40 units daily. Once brought under control, many patients may be kept so on a single morning dose of insulin of up to 40 units; some patients, however, will not even tolerate this as their single daily dose, and I have never had a patient whom it was possible to keep under control on a single daily dose larger than this. Where the daily insulin requirement is less than 40 units it is usually quite feasible to concentrate the whole of this in the single morning dose, even though the diet contain up to 150 g. of carbohydrate. In such cases it is frequently desirable to arrange the diet so that the patient takes from 10 to 15 g. of carbohydrate in the middle of the morning; this may be taken as half a pint of milk, an ounce slice of bread or four ounces of fruit—all roughly equivalent in carbohydrate content.

In the management of the case it is important to ascertain early in treatment whether the weight of the patient be normal for his age and height. The normals may readily be ascertained from a height-age table. If the weight be above normal, steps must be taken to reduce it, and this may be a matter of some difficulty; to increase it is infinitely easier, but in any case the establishment of the particular diet and insulin dosage optional for any given case is not an easy matter. It is difficult—in fact almost impossible—to carry out treatment in the early stages satisfactorily except in an institution, and every effort should be made to get the diabetic, even the *relatively mild* case, into some place where the diet can be carefully regulated, the weight followed, and frequent determinations of the blood-sugar made.

Treatment is better commenced in bed. Roughly speaking, the average adult at rest requires *from* 1000 to 1200 calories daily, and if not overweight the patient may be prescribed a diet providing this amount and containing approximately 100 g. of carbohydrate. Of protein 1 g. per two pounds of body-weight may be allowed, the remainder of the diet being made up of fat. If the patient be above weight the same carbohydrate and protein content is prescribed, but the fat ration is reduced as deemed advisable.

If on admission the blood-sugar is found to be high, insulin is given at once and freely, and the same applies if the blood-sugar rises on the diet. Roughly speaking, if the blood-sugar at the commencement of treatment be above 0·3 per cent., insulin may be started with a morning dose of about 40, a midday dose of 10, and an evening dose of 20 units. As treatment proceeds it may become evident that much larger doses are necessary, and there should not be the least hesitation about giving them, the *morning* dose always being kept the largest and the midday the smallest. Not until the blood-sugar is consistently within normal limits and the urine free of sugar is the diet increased. It is then raised to approximately 2000 calories with a carbohydrate content of from 125 to 150 g. At this stage the patient will commence to show evidence of hypoglycæmia after some or all of the insulin doses. This is a good sign; a few lumps of sugar are kept by the bedside and the patient is instructed to take one at the onset of symptoms with the nature of

The animals were killed from 50 to 113 days after inoculation. The average length of life after infection was 83 days. In obtaining the blood, in culturing in veal broth tubes, and in the technique of making and staining the films, Dreyer and Vollum's method has been followed.

About 0·5 c.cm. of blood taken immediately after death was run into veal broth culture tubes containing 10 c.cm. of medium, and incubated for one to two months. With *a platinum spade, part of the clot was detached, spread* in a thick film, stained by Ziehl-Neelsen, being counterstained with picric acid and the decolorisation assisted by washing with equal parts of acetone and alcohol.

Sixty-three guinea-pigs suffering from glandular and generalised tuberculosis have been examined. Twelve of the animals had been inoculated with a laboratory strain of tubercle bacillus, and had received injections of tuberculin. In one of these cultures typical acid-fast bacilli were found growing luxuriantly in the blood clot and in the broth; a leptothrix was also present as a contamination. The remaining 51 animals had been inoculated with fresh human pathological material; the strain therefore had not previously been subjected to artificial culture. No growth of bacilli was found in films, but isolated bacilli were found in four; in none of these was more than five possible bacilli found, after searching for one to two hours.

From 27 of these veal broth tubes subculture was attempted by spreading a portion of the clot on to Dorset's egg slopes. These were incubated for 2 to 3 months, the cultures being filmed after 6 to 12 weeks. In two slopes slow growth of tubercle bacilli was found to have taken place on microscopic examination after 2½ months. A few other blood cultures were rejected on account of contaminations, and are not included in this series. Thus from the 63 guinea-pigs three cultures of tubercle bacilli have been obtained. It is suggested that my failure to obtain results comparable to those of Dreyer and Vollum may be due to my having used diverse infecting strains instead of stock strains from the laboratory.

ANIMAL INOCULATION.

The most reliable method of demonstrating the presence of a small number of tubercle bacilli in a bulky material is generally considered to be by animal inoculation; though it is a question whether, if the bacilli be very few, they may not fail to cause infection. Striking variations have been reported in the frequency with which the demonstration of tubercle bacilli from the blood stream can be effected by the method of guinea-pig inoculation.[9] Except in cases of generalised miliary tuberculosis, results have often not been consistent with our general conception of the probable presence of bacilli in the blood stream during tuberculous infection. Thus, Distaso, working in this laboratory in 1921, found negative results in cases of pulmonary tuberculosis with pyrexia, and in surgical tuberculosis, while from 13 patients with chronic ambulatory afebrile phthisis, nine of the inoculated guinea-pigs developed tuberculous lesions and two others doubtful lesions.[10]

In this series inoculations have been made from 16 patients, from 4 to 10 c.cm. of blood from an arm vein being added to an oxalate tube, and injected intraperitoneally into guinea-pigs as soon as practicable. In some cases this was followed by the formation of a slough, at the site of inoculation, which healed in due course. One animal died ten days after inoculation; no macroscopic changes were detected post mortem, and it must be assumed that death was due to a late toxic effect of the blood absorption.

The cases were chosen from their clinical [illegible] pect being most likely to show the dissemination [illegible] f tuber[illegible] bacilli by the blood stream. The remaining 15 cas can be grouped thus:—

Group I.—Five cases of extensive bilateral pulmona tuberculosis, all doing badly, two being in the last stages the disease; one suffering from a dactylitis in additio and another from a tuberculous eye condition.

Group II.—Four cases of acu[illegible]e phthisis, of more rece *origin, rapidly becoming worse.*

Group III.—Three cases of chronic pulmonary tuberculos suffering from metastatic joint disease.

Group IV.—Three cases of "surgical" joint tuberculos In these cases the blood was centrifuged, the plasma bei used for other investigations and the red cell deposit bei inoculated.

DETAILS.

Case.	Amount injected (c.cm.).	G.P. No.	Survival period in weeks.	Result.
GROUP I.				
Miliary tub. of lungs with dactylitis ..	6	2244	12. D.	Negativ
Advanced pulm. tub., two years' duration..	4	2325	9. K.	„
Advanced pulm. tub. ..	5	1815	10½. K.	„
Advanced pulm. tub., ischio-rectal abscess, and tub. eye ..	4	2246	19. K.	„
Advanced pulm. tub., two years' duration..	8	2326	9. K.	Positiv
GROUP II.				
Acute pulm. tub., four months	4	2327	9. K.	Negat
Acute pulm. tub. ..	4	1816	10½. K.	„
Acute pulm. tub., early spinal caries ..	3	2245	19. K.	„
Acute pulm. tub., onset after pregnancy ..	4	2112	26. K.	Nega
GROUP III.				
Pulm. tub. with spinal caries	8	2243	19 K.	[illegible]
Ditto	6	2114	26 K.	„
Pulm. tub., with tub. wrist	10	2113	2[illegible] K.	
GROUP IV.				
Tub. hip; cells ..	4	1942	12[illegible] K.	Nega
„ „ „ ..	4	1941	12½ —	No si
„ knee; „ ..	4	1940	50. K.	N[illegible]

D. = died; K. = killed; * old septic abscess of [illegible]

Of the guinea-pigs from Group I. [illegible] case s, [illegible] after 12 weeks; post-mortem examination [illegible] no lesions to account for the death. Three [illegible] well, and were killed after 9 weeks, 10½ [illegible] weeks respectively; thorough post-mortem examination showed no lesions. One guinea-pig, which received 8 c.cm. of blood from a male case of ad[illegible] pulmonary tuberculosis of two years' st[illegible] developed enlargement of the inguinal glands. [illegible] was killed nine weeks after inoculation, and present[illegible] caseating glandular tuberculosis of inguinal, abdomin[illegible] and tracheo-bronchial glands with tubercles in th[illegible] the spleen and scattered miliary tube[illegible] in th[illegible] lungs. Acid-fast bacilli were demonst[illegible] cells [illegible] ed by [illegible] of 3 [illegible] caseous glands; and afterwards by cultures [illegible] ed aft

The guinea-pigs from Group II. were [illegible] ectivel 9 weeks, 10½ weeks, 19 and 26 weeks [illegible] Post mortem there was no evidence of [illegible] rculosi [illegible] necrot The animal surviving for 26 weeks had an [illegible] of whic polymorphonuclear abscess of the splee[illegible] faile histological and bacteriological investig[illegible] to reveal the cause.

The three animals from Group III. were [illegible] ectively 19 weeks, 26 weeks, and 26 weeks re[illegible] illed aft two of the animals from Group IV. were

12½ weeks and 11½ months respectively. All were carefully examined post mortem, and no evidence was found of tuberculosis. The other guinea-pig from Group IV. showed no evidence of infection after three months, the glands were normal and the weight increasing; it was considered negative, and was utilised for another purpose. The details are set out in the Table.

SUMMARY.

1. On the principle of Löwenstein's technique, cultures were made from the heart blood of 40 tuberculous guinea-pigs. Acid-fast bacilli failed to grow.

2. From 30 sanatorium cases of pulmonary tuberculosis, blood clot was digested with pepsin by the method of Jousset; after sterilisation with acid, cultures of the residue on egg medium failed to grow tubercle bacilli.

3. From small quantities (0·5 c.cm.) of heart blood of 63 tuberculous guinea-pigs cultured in veal broth by the method of Dreyer and Vollum, one primary positive culture was obtained, and in two cases subcultures on egg medium were successful.

4. Blood from 15 tuberculous patients has been injected into guinea-pigs. One animal, inoculated from a case of advanced pulmonary tuberculosis, developed glandular and generalised tuberculosis. The other 14 proved negative.

I am indebted to the Medical Research Council for a part-time grant, I wish to thank Dr. W. Davies and Dr. A. Brownlie for allowing me access to their cases; Prof. G. Dreyer and Mr. R. L. Vollum, Ph.D., for a personal interview; and Prof. S. Lyle Cummins and Dr. W. H. Tytler for help and advice.

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THE CULTIVATION OF THE TUBERCLE BACILLUS

AND THE OCCURRENCE OF TUBERCULOUS BACILLÆMIA.

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THERE has always been difficulty in obtaining a primary growth of the tubercle bacillus from pathological materials, such as sputum, pus, and urine. Corper[1] described a potato medium, on which he claimed to be able to grow the tubercle bacillus with some degree of ease, about five weeks elapsing before the appearance of visible growth, and Corper and Uyi[2] reported successful results with the same medium Cunningham and Cummings,[3] using this medium have obtained 14·8 per cent. more positive cultures than positive direct smears. I have used this medium since its introduction, and also more recently that used by Huth and Lieberthal[4]—the Hohn egg medium.

In the investigations described below, the following minor alterations and additions have been made in technique.

In using Corper's medium, the wool plugs are always waxed with paraffin to prevent evaporation and subsequent drying of the medium. In the preparation of the egg medium one sterile flask, roughly graduated, is used throughout; and the tubes are covered with rubber caps instead of waxing. With both methods sulphuric acid is used to kill organisms other than the tubercle bacillus; the strength may be between 5 per cent. and 15 per cent., but 15 per cent. acid must be used when dealing with fæces. After 30 minutes' sulphuric acid treatment, either at room temperature or at 37° C., the emulsion is centrifuged and the deposit very carefully washed with sterile normal saline and recentrifuged before the medium is inoculated with the deposit. It was found experimentally that if the saline washing is omitted the tubercle bacillus will only grow very slowly after contact with 15 per cent. and 10 per cent. sulphuric acid; and even after contact with 6 per cent. and 5 per cent. sulphuric acid, growth is not so rapid as when careful washing is adopted.

THE POTATO MEDIUM.

The efficiency of the potato medium was tested on 66 specimens, four tubes being inoculated from each specimen. In 35 of the 66 specimens tubercle bacilli had been found in direct smears, and a further 11 specimens were proved tuberculous by guinea-pig inoculation. None of the 20 specimens which gave negative results in direct smears and in the guinea-pig gave positive results in culture. Of the 11 specimens which were negative in direct smears but positive in the guinea-pig, only one gave a successful culture; with two others the cultures were spoilt by early growth of contaminants, and the remaining eight cultures were sterile. Of the 35 specimens positive in direct smears, 7 gave successful cultures; with 10 the cultures were spoilt by contaminants; and the cultures of 18 remained sterile. From a total of 46 specimens proved by other methods to contain tubercle bacilli, successful cultures were obtained with 8; and tubercle bacilli were never isolated in culture when other methods had failed. Subcultures on the potato medium were uniformly successful, growth appearing between the tenth and seventeenth days. Details of the specimens giving successful cultures are shown in Table I.

TABLE I.

Case.	Material.	No. of days for growth to appear.	Direct smears.	Case.	Material.	No. of days for growth to appear.	Direct smears.
1	Sputum.	66	+	5	Sputum.	51	+
2	Urine.	55	+	6	Sputum.	27	+
3	Sputum.	30	+	7	R. ureteric urine.	41	+
4	Pus.	57	+	8	Pus.	44	–

In specimen 8 in which no bacilli were found in direct smears, a guinea-pig inoculated with the same material died with tuberculous lesions four days before growth was detected on Corper's medium, though the egg medium (Case 1) had shown growth three weeks earlier.

THE EGG MEDIUM.

The efficiency of the egg medium was tested on 34 specimens, four tubes being inoculated from each specimen. In 17 of these specimens, tubercle bacilli had been found in direct smears, and a further seven specimens were proved to be tuberculous by other methods. None of the 10 specimens which gave negative results in direct smears and in the guinea-pig gave positive results in culture. Of the 7 specimens proved to be tuberculous by methods other than direct smear examination, 4 gave positive cultures and 3 were sterile. Of the 17 specimens positive in direct smears, 8 gave successful cultures, 3 cultures were spoilt by contaminants, and 6 remained sterile. From a total of 24 specimens proved to be tuberculous, successful cultures were obtained in 12; and tubercle bacilli were never isolated in culture when other methods had failed. Subcultures on the egg medium were uniformly successful, growth appearing between the seventh and tenth days. Details of the specimens giving successful cultures are shown in Table II.

TABLE II.

Case.	Material.	No. of days for growth to appear.	Direct smears.	Case.	Material.	No. of days for growth to appear.	Direct smears.
1	Pus.	23	—	7	Sputum.	23	+
2	Pus.	53	+	8	Pus.	35	+
3	Sputum.	31	+	9	Pus.	25	+
4	Sputum.	30	+	10	Urine.	28	—
5	R. ureteric urine.	41	+	11	Pus.	68	—
6	Sputum.	41	+	12	Pus.	18	—

With this medium all the specimens in which cultures failed to give any growth despite presence of bacilli in direct smears were sputum specimens. Uniformly successful cultural results were obtained with positive pus and urine specimens in the absence of contamination.

At times over the surface of the medium, especially at the lower end of the slope, will be seen a reddish-coloured growth, which will be found to be composed of bacilli, resembling the tubercle bacillus but somewhat thicker. These organisms are not alcohol-fast, although at times some of them may be acid-fast. This growth may be obtained in uninoculated tubes, and may only appear if the tubes are kept at room temperature for two or three days and then incubated. The bacillus is easily distinguishable from the tubercle bacillus. It is suggested that before use on the day following the preparation of the medium the slopes should be heated to 70° C. for half an hour. In practice this procedure has been found very satisfactory.

BLOOD CULTURE.

Löwenstein [5] has succeeded in culturing the tubercle bacillus from the blood of patients with tuberculous lesions and also from patients with other diseases, such as disseminated sclerosis, using a special egg medium. I have similarly attempted blood culture using the following techniques: Löwenstein uses citrated blood and acetic acid, and I have followed this practice, but have always used the sulphuric acid treatment, as for sputum, before inoculating Hohn's egg medium. I have also treated a similar quantity (10–12 c.cm.) of citrated blood after centrifugalisation with sterile distilled water instead of the acetic acid. I have found this latter method superior to the other, in that there is less final deposit, as in every case all the deposit is used in inoculating the medium. It was also found that in the control experiments (see below) the deposit obtained by this latter method always grew a few days before the former.

The efficiency of the egg medium for blood culture was first tested by mixing some tuberculous sputum—shown by direct smears to contain tubercle bacilli—with blood from a healthy adult, and treating the whole in exactly the same manner as the blood alone would have been treated. Growths of tubercle bacilli were obtained, and in one case actually some few days before growth had taken place from the sputum alone. Similarly tubercle bacilli from a primary culture were added to blood, and treated as above, and all yielded positive cultures.

In all 25 blood cultures from different individuals have been performed and not one positive culture has been obtained. Of these 25 cases, 15 were from patients with tuberculous lesions. There were 11 cases of pulmonary tuberculosis, one of miliary tuberculosis, one of renal tuberculosis, one patient with Pott's disease, and one with tuberculous meningitis. The other 10 comprised eight cases of disseminated sclerosis and two of lymphadenoma. The diagnosis of all these cases was established as definitely as possible by pathological as well as by clinical investigations. Microscopic as well as macroscopic examination was performed before a culture was pronounced positive or negative; and all cultures were kept at least three months, some even being kept five months before being pronounced negative.

Löwenstein [5] obtained 148 positive blood cultures from 304 tuberculous patients, whereas I have not obtained one positive result on a medium which under the conditions of my control experiments was found to be efficient and which also gave some 50 per cent. positive results from other pathological materials. Neither have other diseases yielded any positive cultures, although Löwenstein [5] [6] obtained growths of tubercle bacilli from such conditions as disseminated sclerosis (17 out of 40 cases) and rheumatism (21 out of 21 cases). Dreyer and Vollum [7] have cultured blood from guinea-pigs dying with tuberculous lesions and have obtained positive results in 91·4 per cent. of cases. Bingold [8] obtained three positive blood cultures from 4[illegible] cases; Jontofsohn [9] obtained three positive results from 41 cases of lung tuberculosis and nine cases of surgical tuberculosis, and Moos Schwabacher [10] obtained one positive result from a case of pulmonary tuberculosis. Muggia [11] obtained negative results in four cases of pulmonary tuberculosis and five cases of acute rheumatism; and Favero [12] similarly obtained negative results from 40 cases; he also controlled his cultures with guinea-pig inoculations, all of which were also negative.

SUMMARY.

Attempts to cultivate the tubercle bacillus from pathological materials on Corper's potato medium and Hohn's egg medium are described. The egg medium yielded more than twice as many positive cultures as the potato medium, and a positive culture has only been obtained in about 50 per cent. of cases in which the tubercle bacillus was demonstrated by direct examination or guinea-pig inoculation.

Blood culture was performed in cases of tuberculosis, disseminated sclerosis, and lymphadenoma, and in no case was a positive result obtained.

I wish to thank Dr. E. ff. Creed for his continued assistance, and also the staff of King's College Hospital for allowing me to make use of their cases.

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CLINICAL AND LABORATORY NOTES

SIMULTANEOUS DISAPPEARANCE OF GALLOP RHYTHM AND BUNDLE BRANCH BLOCK.

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THE following case is interesting and unusual, for at first it illustrated the association of gallop rhythm with bundle branch block, and later the disappearance of both of these at the same time—suggesting that the gallop rhythm was due to the bundle branch block.

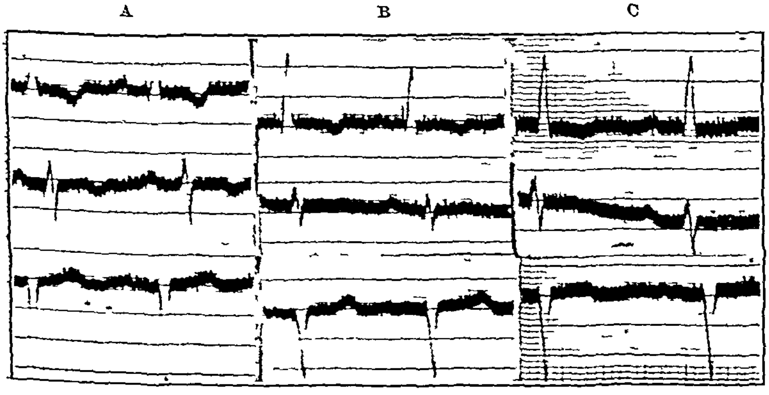
The patient had syphilis when aged 25, and was thoroughly treated with mercury and iodides. He married two years later and had five children, who were apparently healthy, and three who died young, these not being the three eldest. He was a heavy smoker and drinker, admitting to 8 pints of beer daily and 4 oz of tobacco a week. In spite of this he made a good recovery from pneumonia at the age of 41.

At 50 he took to easier work as a caretaker: he had already started to put on weight and to be a little short of breath Six months later while in bed he vomited a large amount of dark congealed blood. This was attributed to cirrhosis of the liver, and he reduced his consumption of alcohol very considerably.

He was first seen by us in May, 1931, when he was 52 During the previous two years he had increased in weight from 11½ st. to 13 st., and had become short of breath on exertion. During the previous six weeks he had begun to complain of attacks of pain represented by a choking feeling in the throat, when he had to take off his tie and collar. In one attack in bed he awoke with a choking sensation and felt he was going to die Two attacks, one while in bed and one while walking, were specially severe.

On examination his heart was much enlarged, mainly to the left (orthodiagram 17 cm), and the aorta was considerably dilated without any local aneurysm; his blood pressure was 210/130; the aortic second sound was not clear, but there were no murmurs. He had well-marked gallop rhythm, and a flick could be felt on palpation at the apex corresponding to the third sound of his gallop rhythm. An electrocardiogram showed typical right bundle branch block. His Wassermann reaction was negative. He was seen again several times, the gallop rhythm remaining unchanged; the electrocardiogram on two occasions showed no difference in the degree of bundle branch block (Fig. 1, A and B) He was given iodides, but not in large doses.

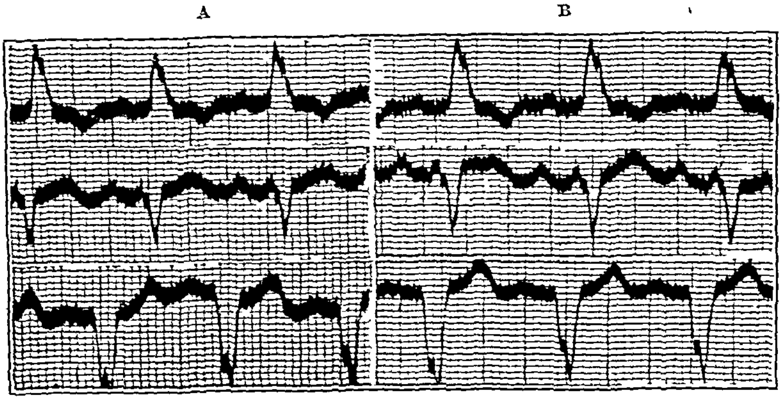
FIG. 2.



On July 10th, the gallop rhythm persisting unchanged, he was allowed to start work, for this was extremely light with no physical exertion, and he felt that otherwise he might lose his position altogether. His blood pressure was 190/120. He only managed to work for nine days, and then had an attack of orthopnœa at night with the choking feeling lasting most of the time for eight hours He sweated a lot, and again thought he was going to die.

In spite of this, when he came to hospital on August 7th gallop rhythm was not noticed, the flick was not felt on palpation over the apex, and, to our surprise, the electrocardiogram showed no bundle branch block, there being only left ventricular preponderance with the T wave inverted in lead I. and slightly inverted in lead II. (Fig 2, A). His blood pressure was 180/130.

FIG. 1.



He returned to work in September, and when next seen had been at work a month. He felt better and was able to walk a mile with less dyspnœa. There was no gallop rhythm, and his electrocardiogram was similar to that in August, but T I. was less deeply inverted, and T II. was flat (Fig. 2, B)

In December, and in February, 1932, nine months after he was first seen, he was at work and was again rather better, though he had been in bed once for a few days with a slight recurrence of pain. The first sound was almost clear; there was no gallop rhythm, and no bundle branch block in the electrocardiogram; the T wave in lead I. was again better, and now only just inverted (Fig. 2, C) There was no significant change in his orthodiagram, and the blood pressure on the last three occasions had been 190/130, 210/130, and 220/125.

Bundle branch block has often been given as one cause of gallop rhythm, but we are not aware of any case where the disappearance of gallop rhythm has been found with a change from bundle branch block to normal conduction. In this case the note about the disappearance of gallop rhythm was made before his electrocardiogram was taken. It is possible that the whole history represents a small coronary thrombosis in a patient with high blood pressure, the bundle branch block and gallop rhythm being a temporary result of this, but the clinical history is not at all suggestive of this. The subsequent changes in the T wave in lead I. would certainly support this view, but it was not the original diagnosis, and we had assumed that he was a patient with permanent sclerotic changes in the heart, and that his bundle branch lesion was likely to be permanent.

A CASE OF PORTAL CIRRHOSIS.

BY JOHN H. ANDERSON, C.M.G., C.B.E., M.D. MELB.,
PHYSICIAN, RUTHIN CASTLE.

A medical man, aged 47, had lived for a long time in the East. He was known from boyhood for his abnormally large appetite, being fond of highly spiced and seasoned foods; he was a heavy beer-drinker as a student, he drank a good deal of whisky during the war, and for the last three years he had been "doing two men's work and taking stimulants to keep going." From 1927–1929 he had chronic infection of frontal sinuses and antra and in October, 1929, had an acute attack of frontal sinusitis, culminating in spontaneous discharge of pus (*Staphylococcus aureus* on culture); there had been similar attacks of varying severity every 10 to 12 weeks since. Lately these attacks had been accompanied by increasing colic and tympanites, finally requiring morphia. About the middle of April, 1931, he noticed slowly increasing abdominal distension and in June tapped himself and withdrew 22 pints of normal ascitic fluid; the self-tapping was regularly repeated at five to seven days interval. A big hæmatemesis followed third tapping and a smaller one two days later. He lost 2½ st. in weight, and on admission to hospital complained of distension and a constant dull abdominal ache, most marked over liver, only relieved by tapping.

Examination.—Colour poor, emaciated, weight 8 st. 9 lb. (normal 11 st.). Circulatory system: B.P. 130/100, pulse 100, heart sounds clear. Blood: Hb. 75 per cent., red cells 4,100,000, and white cells 11,600 per c.cm.; differential count, polymorphonuclear leucocytosis; W.R. negative; blood-sugar, non-protein nitrogen, cholesterol, icteric index and van den Bergh reaction normal; blood sedimentation rate greatly increased at 130 mm. per hour. Nervous system normal. Respiratory system normal except for scattered moist sounds both bases. Alimentary system: tongue coated. Abdomen: distended with fluid, marked thrill; liver palpable, not tender, no nodules felt. Urine: normal except for trace of bile-salts occasionally. Fæces: occult blood present, occasional mucus; culture negative; no amœbæ seen. X ray examination: head sinuses clear. Barium meal: duodenal cap rigid and deformed, bowel as a whole shows evidence of outside pressure.

Diagnosis.—Cirrhosis of liver with perihepatitis and possible mild colitis.

Progress.—Gradually downhill. Tapping necessary every five to seven days and yielded a normal ascitic fluid. Within a couple of hours of tapping a grating over the liver could be heard and felt which disappeared as the fluid reaccumulated. Appetite improved and bowels acted copiously after tapping, the largest stool passed weighing over 26 oz. Leucocytosis increased to 18,000 and pain became peritoneal shortly before death, which took place four months after first tapping.

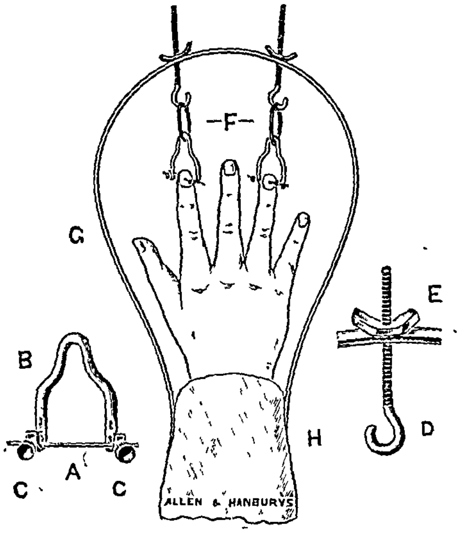
Post-mortem examination.—Liver small, tough, granular on section with a thickened capsule; pancreas firmer than usual; other organs fairly normal except for dilated veins at cardiac end of œsophagus.

Comments.—(1) A case of portal cirrhosis is briefly described in which the onset of severe symptoms came shortly after a repeated acute infection. (2) The action of alcohol per se in producing cirrhosis is debatable; it is suggested in this case that the detoxicating power of the liver was primarily weakened by alimentary excesses and bacterial poisoning. (3) Paracentesis was performed 22 times in all, 11 times by the patient himself and in such unlikely places as hotel bedrooms and bathrooms on board ship. (4) The amount of appetite and the size of the motions depended entirely on a mechanical factor, the intra-abdominal pressure. (5) Contrary to general custom, support for the abdomen by a binder, during and after tapping, was refused as it increased pain and discomfort.

NEW INVENTIONS

AN APPARATUS FOR THE TREATMENT OF FINGER FRACTURES BY SKELETAL TRACTION.

THE application of skeletal traction is now in common use for treating fractures of the long bones. The method is equally applicable to fractures and dislocations of phalanges of the hand and of the metacarpals, although it involves the use of some specialised apparatus. The illustration shows a simple and inexpensive method for applying traction to the fingers. The traction appliance consists of a short length of steel wire (A), which transfixes the terminal phalanx from front to back through the nail; rustless steel wire, 0·8 mm. thick, is suitable for the purpose. A straight needle can be employed instead of the wire, but on account of the temper of the metal there is a risk of breakage. The wire is held in a strut (B), which is made out of stout brass wire. Milled screws (C C) hold the wire firmly. The pull to be exerted in finger fractures is not great and so tensioning of the wire is unnecessary. The pull is exerted through the bracket (G), which is firmly held on to the forearm by a light plaster case (H). The bracket is conveniently made from an aluminium strip about 1·25 cm. × 0·5 cm. Holes are drilled in the bracket in suitable positions for the passage of the threaded hook (D). The position of this hook is controlled by butterfly nut (E). Steady traction is obtained by the interposition of a stout rubber band or section of a rubber tubing (F) between the hook and the strut (B). Such an appliance will pull out any recent fracture of a phalanx or metacarpal in which there is overlap, and is powerful enough to reduce a dislocation at the interphalangeal joints of some standing. In one case I was able to reduce a dislocation at the proximal interphalangeal joint which had been present for seven weeks.



The appliance has been made for me by Messrs. Allen and Hanburys, Ltd., Wigmore-street, London, W.

C. MAX PAGE, M.S.Lond., F.R.C.S. Eng.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

At a meeting of this section held on April 26th, the chair was taken by Dr. H. Morley Fletcher, the President, and Dr. S. H. Cookson read a paper on the size and shape of the

Heart in Thyroid Disease.

Opinion, he said, was much divided on whether the heart was or was not enlarged in disorders of the thyroid gland in which the secretion was excessive or abnormal. He would, however, show radiographs proving that the heart was often enlarged in goitre, and that it had a characteristic picture. This picture included: (1) convexity of the pulmonary arc instead of concavity—filling out of the pulmonary bay; (2) elevation of the aortic knob; (3) straightening of the left border, due to a combination of (1) with some enlargement to the left. In the result the heart became rather ham-shaped. In a girl of 16, with goitre symptoms of only two months' duration, the aortic knob was as high as the clavicle and the pulmonary bay convex, although there was no enlargement. Other young subjects showed these signs together with enlargement. In severe cases gross enlargement might be seen, but his series gave no support to the view that enlargement was mechanically produced by pressure of the goitre on the vessels. Radiographic evidences of heart failure were prominence of the superior vena cava, effusion at the right base, and congestion of the lung roots.

In mitral stenosis the pulmonary arc might be developed to an extreme degree and below it might be seen a second bulge, due to the conus arteriosis. Moreover, the aortic knob tended to be unduly small and there were often dense lung roots without any congestive failure. These points distinguished stenosis from the goitre heart, which did not show such an extreme pulmonary arc or any conus bulge and in which the aortic knob was unaltered in size and the lung roots were only dense in the presence of heart failure.

The cause of goitre heart might be the greater volume carried by, and the greater pulsation of the great vessels; the weaker pulmonary arch would give way before the aorta.

The President asked for further details of the causation.

Dr. J. Parkinson said that these changes were found in a fair proportion of cases of hyperthyroidism and it was remarkable that the hearts of young people should be so affected. It had been stated that the lung fields were clearer in goitre than in the normal case, but others thought this was due to the emaciation. In mitral stenosis the lung areas would be more shadowed.

Dr. Cookson, in reply, said that measurements had shown that the pulmonary artery was actually dilated. Some German workers had suggested that the prominence of the pulmonary artery was entirely due to enlargement of the right ventricle. He did not think the lung fields were really any clearer than normal in goitre.

Dr. Adolf Schott (Bad Nauheim) read a paper on the

Respiratory Changes of Blood Pressure.

These changes, he said, consisted in a decrease in the amplitude of the pulse during inspiration and an increase in expiration. There were three forms of pulsus paradoxus: (1) the extrathoracic, which had no clinical importance; (2) the mechanical, due to adhesions between the heart and neighbouring structures; and (3) the dynamic, which was the subject of his paper. He described a number of experiments on animals and patients, particularly a method of direct registration, as a result of which he had found no connexion between pulsus paradoxus and latent or inherent weakness or atonia of the heart muscle. A pulsus paradoxus was found, however, over a wide range of pressures, in emphysema, even in very early cases where the diagnosis was only radiological. It was found also in artificial pneumothorax. These results could be explained by the fact that the intra-alveolar respiratory pressure changes were markedly increased and reacted on the pulmonary vessels. The practical conclusion was that pulsus paradoxus might indicate increased resistance in the bronchial and alveolar tubes, and could not be regarded as a sign of incipient atonia of heart muscle. A closer definition of pulsus paradoxus was advisable, and the dynamic form should be diagnosed only if the pulse tracing showed the characteristic respiratory changes when taken by an adequate recording system under no pressure outside the range: systolic pressure to 15 mm. below.

Dr. A. Brian Taylor read a paper on

Tuberculous Empyema.

This form of empyema, he said, differed from other forms and required different treatment. His paper was based on a series of 79 cases from the Brompton Hospital. A purulent tuberculous effusion indicated pleural tuberculosis, either primary or secondary; a clear effusion might be a secondary exudate or an allergic response. The morbid process in the pleura followed the usual changes of tuberculous lesions, but the frequency of early adhesions accounted for the comparative rarity of empyema. Only a few main ætiological types were common. In his series the onset had been as follows: (1) in an artificial pneumothorax, 47 per cent.; (2) by primary purulent pleurisy, 15 per cent.; (3) in a previous serous pleurisy, 16 per cent.; (4) after spontaneous pneumothorax, 22 per cent. The final diagnosis was made by finding the bacilli in the exudate, but often diagnosis had to rest on the presence of a sterile effusion, with a more or less chronic course and clinical features compatible with tuberculosis. The clinical course might, however, vary widely.

The treatment presented problems of the gravest difficulty and the prognosis was bad. Treatment must take into account: (1) the mechanical and toxic effect of the effusion; (2) the condition of the underlying lung; and (3) the general state of the patient. When the trouble in the lung was slight or controlled, where the pneumothorax was otherwise producing satisfactory results, or where the general condition was good, treatment should be energetic and radical. Removal of the effusion was best performed by gas replacement, which occasionally produced cure. More often, further treatment was needed, and pleural lavage was often very helpful. By continuing pleural lavage combined with gas replacement to keep the cavity dry and empty, the lung could be gradually re-expanded to such an extent that complete cure resulted. It was, of course, useless to re-expand a lung containing active disease, but expansion was fairly safe after two years. Pleuricotomy with constant drainage was a useful measure but seldom produced permanent cure. It was a temporary measure, or could be applied when the patient was too ill for radical treatment. Oleothorax had not proved very satisfactory at Brompton; it was mainly indicated in recurrent purulent pleurisies where the toxæmia was very severe, in cases secondarily infected before surgical treatment was commenced, or in the presence of pleuro-pulmonary perforations which might be healed by oil. Thoracoplasty was one of the most valuable methods; it brought the chest wall down to the lung to produce adhesions. It was the operation of choice when the active lung disease was unilateral, or where it had been locked up by fibrosis. Phrenic avulsion should be performed first.

Of the 79 cases in this series, 31·6 per cent. were alive three years after treatment, 58·2 per cent. dead within two years, and the rest untraced. Pleural wash-outs had been used alone in 18 cases, half of whom had died, and in addition to gas replacements in 57 cases, 52·6 per cent. of whom had died. Thoracoplasty in 13 cases had had a mortality of 30·8 per cent.

Dr. G. MARSHALL said that tuberculous empyema was almost always due to rupture of the lung, and treatment should depend on whether it was tuberculous or secondarily infected. If the purely tuberculous were left alone, most patients did well, but the secondarily infected had to be treated, preferably by continuous suction drainage, which was a tedious treatment but extraordinarily worth while.

Dr. E. R. CULLINAN read a paper on

Dermatomyositis.

This was, he said, a disease of unknown origin difficult to diagnose from scleroderma. It appeared to be an infection, but nothing else was known of its ætiology. He described a case which appeared quite different from scleroderma. The patient had complained of loss of power and a rash. She had had difficulty in walking and balancing, in feeding herself, and in clearing her throat. She had had vague generalised pains. The rash had been a patchy skin pigmentation; the skin had felt stiff and the subcutaneous tissue thick. All the joints had been stiff—some of the muscles had seemed to be in a state of tonic contraction, and had shown some reaction of degeneration. The chief reflexes had been absent. There had been moderate evening fever. She had gradually become worse, and had died in a manner suggesting suffocation from mucus which she could not dislodge. The peculiar changes in the muscles were apparently confined to dermatomyositis; they were never seen in scleroderma, however similar the two skin conditions might be. Autopsy had shown a marked lymphoid hyperplasia in the stomach, spleen, and thyroid, a general diffuse fine fibrosis, with wide areas of chronic inflammation (lymphocytes and histiocytes) in the muscles, and foaming macrophages in the areolar tissue. Some fibres showed a hyaline degeneration like Zenker's degeneration.

Dr. PARKES WEBER asked whether the urine had been examined for myoglobin, and what precisely was meant by lymphoid changes in the stomach and thyroid.

The PRESIDENT asked if the blood had shown any eosinophilia.

Dr. CULLINAN, in reply, said that the urine had not been specially examined for myoglobin; it had contained no albumin. By lymphoid hyperplasia he meant overgrowth of the lymphoid tissue in the subepithelial layer of the stomach, but there had been no definite appearance of follicles in the thyroid. There had been no eosinophilia.

SECTION OF UROLOGY.

AT a meeting of this section on April 21st, the chair was taken by Mr. RALPH THOMPSON, and a discussion on

Nephrostomy in Theory and Practice

was opened by Prof. HUGH CABOT of the Mayo Clinic. Nephrostomy, he said, was a very old operation as an emergency procedure, but the earliest discussions on the subject did not appear to date back beyond the 'eighties. The rapid return of function and the effect, upon infection, of drainage through the kidney substance had attracted attention at that time. He would, he said, consider the application of nephrostomy in three types of case—namely, calculus disease; chronic hydronephrosis with or without infection; and chronic infection of the kidney. Nephrostomy was desirable in calculus disease when the pelvis and calyces of the kidney were markedly dilated, and he believed that the operation diminished the risk of infection considerably in the non-infected cases; there was, however, [illegible] the operation might stir up latent [illegible] the kidney had been primarily injured by stone, and had subsequently been the site of prolonged infection, it was a temptation to regard nephrectomy as the only safe operation; but if there were stones, however small, on the opposite side he hesitated to recommend nephrectomy. Moreover, in a number of instances where the stone-bearing kidney on one side had been removed, stone had developed in the opposite kidney although it might have been healthy for years. In one sense a stone-bearing kidney on one side might be a safeguard to the other kidney. Possibly on the removal of the stone-bearing kidney the disturbance of chemical mechanism, whatever it might be, was transferred to the previously healthy kidney. For these reasons he was unwilling to perform nephrectomy where it could be avoided, and preferred to do as much as possible for the injured kidney, however serious the damage might appear to be. Cases of pyonephrosis without stone also fell into this group, and were undoubtedly the outcome of infection of a hydronephrosis. It had been recognised for many years that, although it was not possible to determine with any accuracy how much the function of a kidney containing a stone was depressed, removal of the stone would often result in a return to something approximating to normal function. In cases of pyonephrosis, however, the kidney was often reported to be completely functionless. This did not necessarily mean that the kidney was incapable of function. In a series of 42 cases in which no function other than moderate secretion of water could be detected, he had found that drainage of the kidney and removal of stone, where stone was present, resulted in a return of about 50 per cent. of the normal function. It was, therefore, unjustifiable to declare a kidney incapable of function, even when it failed to respond to the elaborate tests now available. In the normal kidney only a certain proportion of the glomeruli were active at any one time, and under adverse conditions it might be possible for the whole kidney to lie fallow for a considerable period. If the active glomeruli were reduced from about 30 per cent. to about 3 per cent. the kidney might possibly continue to preserve its anatomical structure and capacity for normal function. Nephrostomy was valuable as a method of estimating the capacity of a kidney which appeared to be functionless. An advantage of nephrostomy over pyelostomy was the provision of more satisfactory drainage. His experience had been that kidney function would return after drainage in proportion to the amount of normal kidney tissue remaining. Opinions differed on the effect of nephrostomy in clearing up infection. Acute recent infections generally cleared up entirely, but were relatively rare among the cases in which the operation was indicated. Recent and slight infection of an acute hydronephrosis usually cleared up readily whatever method of drainage was employed, provided the obstruction was removed. With chronic infection the question presented difficulties; at the Mayo Clinic there were a number of patients who had been draining for some years following nephrostomy, and who were retaining a kidney of some value. A kidney which had been severely infected at the outset usually continued to harbour urea-splitting organisms, but it might serve as a useful organ, nonetheless, which was worth preserving if the opposite kidney was injured. Where both kidneys were damaged it was worth while trying to preserve a kidney of this kind; he did not think there was evidence to support the view that such a kidney menaced the kidney of the opposite side. He believed that nephrostomy had a wider field of application than was usually conceded. In cases of doubt the function of an infected kidney might be saved by the operation, whether stone was present or not. In certain cases, particularly cases of cancer, permanent nephrostomy might be valuable, and was not more socially inconvenient than permanent colostomy: the patient might live comfortably for many years. The tube could be so arranged as to be accessible to the patient, who could change it himself after a little experience. He shared the view, put forward in 1910 by Watson, that in bilateral calculus disease, permanent nephrostomy on one or both sides might preserve the kidney tissue from further destruction. It was even possible that in some cases permanent nephrostomy might inhibit the development of further calculi in the kidney, though the evidence on this point was inconclusive. At his clinic there were patients operated on for recurrent calculi who had lived for 3, 6, and 15 years after permanent nephrostomy without further recurrence. Two other cases had been reported in which permanent nephrostomy had been performed for recurrent calculi, and there had been no further recurrence. In Watson's case in 1910 not all the calculi had been removed, but there was no evidence that they increased in number following permanent nephrostomy, and the patient lived for 25 years with good kidney function.

Sir JOHN THOMSON-WALKER remarked that in this country the term nephrostomy was used to imply an operation leaving a permanent fistula, and nephrotomy was reserved for temporary drainage of the kidney. Conservative treatment was favoured in cases of bilateral calculus, but it had not been his experience that removal of stone from one kidney favoured the development of stone in the other. On the contrary, it had been found that if an infected stone was left in one kidney, there was a tendency for stone to develop in the opposite kidney.

Mr. JOCELYN SWAN doubted whether the apparent improvement in renal function following drainage was a true improvement. The stone might depress the action of the kidney in the earlier tests, and the apparent restoration of function following removal of the stone was therefore deceptive.

Mr. F. A. G. JEANS and Mr. ZACHARY COPE also joined in the discussion.

Prof. CABOT, in replying, said that nephrostomy was not an operation which should be substituted for nephrectomy if the other kidney was sound.

THE MEDICO-LEGAL SOCIETY.

AT a meeting of this society on April 28th, with Lord RIDDELL, the President, in the chair, a paper on the

Gynæcologist in the Law Courts

was read by Mr. J. BRIGHT BANISTER. He said he believed that most gynæcologists felt an abhorrence about appearing in the law courts, first because the cases concerning which they were required to give evidence were usually sordid and unsavoury, and secondly because a gynæcologist in active practice found his work seriously dislocated by the inevitable delays associated with legal hearings. Further reasons were that the evidence he had to give was hard to present to the non-medical mind, which usually was very ignorant of the subject. Recently, for example, a successful barrister was much annoyed with a doctor because X rays had not been employed to settle the mystery of a possible six weeks' pregnancy. The gynæcologist's difficulties were not lessened by the fact that usually he knew nothing of the law; it took him a long time to realise that law and equity were not related to one another. Even the oath appalled him, for it required the telling of "the truth, the whole truth, and nothing but the truth." A medical examination was made, and certain facts were noted, which, communicated to the court, were, to the doctor, the truth; but if other facts not noticed were not included it was not the whole truth. And in the interpretations and inferences drawn, the witness was made to feel that his completed evidence was something more—it might even be less—than the truth. Even the words he used were sometimes altered, as in a case in which he referred to a woman's abdomen, and the judge interposed with the remark to the jury: "When the doctor says her abdomen he means her stomach."

Mr. Banister's main purpose, he said, was to relate some of the reactions of a gynæcologist to his experience in the courts. He thought a distinction should be drawn between the gynæcologist and the ordinary medical witness and that the former should be regarded as an expert, for he was required to maintain an impartial outlook on all the circumstances at issue. The examination-in-chief and the cross-examination were apt to produce on the witness one of two effects: either he became antagonistic and so lost his impartiality, or he realised that anything was possible in gynæcology, as in other branches of the profession, and so was of little use to any one side, especially as he heard evidence by other medical witnesses which was at variance with his own. Mr. Banister therefore thought that a medical witness on a subject should be one who had experience of it in actual practice. In one case a medical witness, who said he had been 30 years in practice and had commanded a general hospital during the war, gave evidence to the effect that a cystocele was a cyst containing fluid, and so could not be in the genital canal of a woman—though he had never seen a cystocele. Another medical witness in the same case admitted he did not know what a cystocele was. What was the position of the medical witness who was to follow ?

Another thing to remember was the attitude of the law towards the class of case in general in which the gynæcologist was called as a witness : lawyers in the case were sure to give weight to the published abnormalities associated with the generative function. On a question of the division of an estate on the presumption that a woman advanced in years would not bear any more children, the experience and knowledge of the gynæcological witness was largely nullified by counsel quoting cases—some not well authenticated—of women having given birth to children at an advanced age. Early last century it was stated that a woman, aged 69, had given birth to a child, but it was now agreed that there could be no childbirth after the age of 52. Again, the law presumed that pregnancy could not occur until some degree of menstruation had been set up, but some years ago a girl, aged 10¾ years, was brought to hospital and was delivered of a normal child weighing 8 lb., though no one connected with her knew of her having had periods at any time. The important matter was to get all possible evidence in regard to the particular patient.

One of the most difficult things was to stand up in the witness-box and say that a particular patient was *not virgo intacta ; it would be easier to say she was so.* Cases had been reported in which a baby was born to a mother who, to all appearances, had an intact hymen. Another difficulty was to say, in an old-standing case, whether a woman had had venereal disease, and in this connexion Mr. Banister criticised the carefully guarded attitude of some pathologists who declared themselves uncertain those presented with a slide of discharge from the patient in question.

Mr. Banister thought medical cases would be more satisfactorily settled if a medical assessor could sit to advise the judge on technical points.

DISCUSSION.

Sir BERNARD SPILSBURY thought that the gynæcologist was usually regarded by the courts as an expert, not on the same level as a general practitioner. He agreed that a real difficulty, when cases were heard in court, was having unusual or very rare cases quoted against a considered opinion. And many of the cases in the literature were not well authenticated, and under present conditions would not be accepted as reliable. As regards the diagnosis of virgo intacta he mentioned a case in which destruction of a child's hymen was due to threadworms, and until the cause was known suspicion of foul play was entertained. He did not think any pathologist should hesitate to give a firm opinion on the discharge in an early case of gonorrhœa. In a later stage, however, the genital tract swarmed with bacteria, and the gonococci were so far diluted that sometimes it was not safe to express a positive opinion.

Mr. F. J. MCCANN pointed out that the medical man could state whether a hymen was present or not, and also describe the condition in which it was found, but it was quite another matter to say that a girl was virgo intacta. He had never yet seen a girl with a hymen congenitally absent, though witnesses in court had often made a strong point of the possibility of its congenital absence. Many cases of vulvitis were treated on the assumption that they were gonococcal when they were not, and the reprehensible habit of syringing—which served to carry the infection still higher—was responsible for destroying many hymens. The acute stage of gonorrhœa was easy to recognise, but in women the diagnosis in a chronic stage was difficult. An important point was, that if one could discover, with the urethral infection, involvement and enlargement of the glands of Bartolini, one could be certain that the condition was gonorrhœa.

Sir WILLIAM WILLCOX objected to the appointment of assessors to help the judges ; he believed that in general the best assessor was the British jury. The present system worked well. When, owing to lack of means, no expert was giving evidence on the other side, he made it his practice to give a general review of the case from the medical aspect.

Mr. W. G. EARENGEY, referring to the telling of the whole truth, said that if doctors were going to set out to tell the court all they knew about the subject at issue, there was likely to be a long extension of hearings. And doctors should not have the idea that they were ranged on to a side in the case ; they were called to supply important information.

Dr. J. WATKIN EDWARDS approved of the appointment of an assessor to assist the judge ; one did not want in that post a man who could analyse evidence, but one well acquainted with the subject under consideration.

The PRESIDENT expressed his objection to the appointment of assessors. If such were appointed they would not be very popular among their professional brethren, who did not think very much of each other personally, though they were ready to coöperate against the rest of mankind! Their critical attitude was of much service in the courts. In order to obviate the great waste of professional time the courts required a business manager, who would so arrange cases that there was little waiting on the part of witnesses and counsel. He was firmly convinced that the British system of administration of justice stood in need of no emendation. As to the age beyond which it was not possible for a woman to conceive, he once offered a prize of £40 for the discovery of the oldest mother, and the winner was a woman aged 53 years 224 days ; mother, father, child, and doctor attested to the fact.

Mr. BANISTER replied that he did not feel there was any want of considerate treatment by the courts of the gynæcological witness ; his chief complaint was about the great amount of time such witnesses, with others, were obliged to waste.

ORTHOPÆDIC HOSPITALS.—*At the annual meetings* of the Shropshire Orthopædic Hospital, Agnes Hunt Surgical Home, and Derwen Cripples' Training College it was stated that 1540 in-patients, 707 of whom were children, were treated last year. The average stay of each adult was 110 and of each child 73 days; there were 598 operations. There are 33 after-care centres which in 1931 treated 4403 patients. New buildings for the training college to accommodate 100 students are nearing completion. They have been built by direct labour, much of it by the cripples themselves. On account of the very severely crippled type of student admitted to the college, the Board of Education has sanctioned an increase in the fees from 25s. to 35s. per week.—Two patients, one in the uniform of a Scout and the other in that of a Guide, recently laid the corner-stone of the new Princess Margaret Rose Ward of the Bath and Wessex Children's Orthopædic Hospital. The cost of the ward, £6500, is being defrayed by Mr. Stanley Wills.

REVIEWS AND NOTICES OF BOOKS

A Text-book of Psychiatry.

Third edition. By D. K. HENDERSON, M.D., and R. D. GILLESPIE, M.D. London: Oxford University Press, Humphrey Milford. 1932. Pp. 595. 18s.

Essentials of Psychiatry.

Second edition. By GEORGE W. HENRY, A.B., M.D., Assistant Professor of Psychiatry, Cornell Medical School. New York. London: Baillière, Tindall, and Cox. 1931. Pp. 304. 21s.

THE valuable text-book by Drs. Henderson and Gillespie is now the fullest and most satisfactory single exposition of Anglo-American psychiatry available. Though it is less comprehensive and detailed than the comparable Swiss and German text-books, and oddly capricious in the selection of recent work for notice, its authors have evidently taken trouble to make the work a reasonably complete manual. An informative, cautious chapter on the psychiatry of childhood has been added, and the chapters on epilepsy and legal aspects have been expanded. The section on paranoia and paranoid reaction-types is unsatisfactory, and a notable omission is the failure to refer to the recent work of Kolle in this field. The psychopathology still gives the impression of a patch, perfunctorily inserted, rather than matter incorporated into the pattern of the work as a whole. The value of the book would be enhanced if all references were given in full, instead of merely the name of the writer under discussion. It is hard to see the justification at this date for a separate chapter on psychoses and psychoneuroses in war. It would be a pity if so useful and handy a work were to become unwieldy through increase, and consequently suffer a falling off in its popularity among medical students and others; but if it could be done without making the book too bulky, a fuller discussion of psychopathic personality and of the general principles of treatment would be an advantage in the next edition.

There will inevitably be differences of opinion as to which are the essentials of psychiatry. Dr. Henry's book presents in direct and unpretentious form that broad, rather than precise, approach to the subject which has come to be characteristic of the American school. An emphasis on total reactions, on environmental influences, on personality and habit-formation, may be regarded as giving the best background and introduction to the study of this most intricate branch of medicine, especially if therapy be the end in view, rather than research. But one would expect more than a line or two to be given to the hereditary aspects of mental disorder, or, in another field, to the malarial treatment of general paralysis of the insane. General principles, however, and the psychological and social approach have been the author's chief concern, and the book is well-balanced from this point of view. Less than half of it is occupied with descriptions of abnormal syndromes; the major part consisting of chapters on methods and purpose of examination, principles of treatment, mental hygiene, psychopathology of the normal, medico-legal and historical aspects, and psychiatry in the general hospital. There are also excellent chapters on psychiatric nursing (by Adèle Poston, formerly matron at Bloomingdale Hospital), and on psychiatric social service. The work has been considerably rewritten and enlarged for this second edition.

Fertility and Sterility in Marriage.

By TH. VAN DE VELDE, M.D., formerly Director of the Gynæcological Clinic at Haarlem. London: William Heinemann, Ltd. 1931. Pp. 448. 25s.

THIS is the third of a trilogy of books written by Dr. Van de Velde of which the first, "Ideal Marriage," was reviewed in 1929.[1] The author has here set himself the difficult task of writing both for the medical and the lay public and, as is to be expected, the work suffers from this dual intention. The medical reader will find in it much tedious description of the anatomy and physiology of the reproductive organs; the lay reader will encounter throughout the book disconcerting outcrops of technical terms the meaning of which he will not understand. But the book suffers from another defect which will distress both classes of readers. The author does not confine himself to describing and interpreting the relevant facts. He generalises freely on moral and religious questions. Thus he is at pains to differentiate the ethical position in regard to contraception which he personally adopts, from that assumed by moralists and ecclesiastics; he condemns, on a priori moral grounds, the legalising of abortion without any reference to the vexed question whether the measure would diminish maternal morbidity and mortality; he introduces into the text of his book two "intermezzos of aphorisms" which do not add to its scientific value; and he expresses himself as follows on the subject of religion: "In my opinion, religion is of enormous importance, for individual happiness; I consider religious belief and 'illusion,' 'fiction,' and 'vital hypothesis' of the first rank, offering many human beings such help and support in the conduct of their lives, that, to them, life would be insupportable without such belief." The illusory, fictitious, and hypothetical characteristics of religion are then dealt with at length. It may be felt by medical readers that the tone of the book suffers from the fact that the author dogmatises too freely in the first person on moral questions.

However that may be, Dr. Van de Velde deals informatively with a wide range of subjects. The attitude taken by the Roman Catholic Church, the population question, the problems of differential fertility, and the personal implications of contraception are instructively discussed in the first part of the book which is devoted to "ethical postulates and principles." In the second part, chapters on the physiology of reproduction and the prevention of pregnancy precede an exhaustive discussion of the causation, treatment, and prevention of sterility in women, and of impotence in men. There follow chapters on artificial fertilisation and contraception. In the latter appears a condensed and, from the standpoint of this book, irrelevant account of the various positions in which coitus may take place. Dr. Van de Velde has already given an elaborate presentation of this theme in "Ideal Marriage" which has been copied by other writers and is one of the fullest in the English language. The book contains further chapters on sterilisation by surgical, biochemical, and radiological methods. The author has invented a somewhat elaborate operation by which he claims temporarily to sterilise female patients. It consists of an incapsulation of the ovaries in the uterovesical pouch. The ovaries are thrust forward through an incision in the broad ligaments, after which the uterus is sewn over them to the bladder. In order to unsterilise the patient, the operative procedure is reversed. The operation is not, in our view, likely to be favourably received, for it is open to many criticisms.

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[1] THE LANCET, 1929, ii., 177.

Twenty plates illustrate pelvic anatomy, ovarian segmentation and implantation, operative procedures, and contraceptive appliances. The author's tendency to dogmatise is evident in his treatment of scientific no less than of ethical subjects. He leaves few topics sub judice and he makes at least one assertion which has been disproved—namely, that the intra-uterine silver ring *must* have an injurious effect upon the child if a pregnancy occurring despite the presence of the ring goes to term. On the last page of the book is given the address of a manufacturing chemist from whom a contraceptive jelly invented by the author may be purchased. There are 317 references to other books and papers, mostly in German, which are not arranged in alphabetical order. Many of these have but a distant bearing on the subject, while some important recent work in this country is not noticed. There is no index. The translation is competent and the book, as a whole, is readable.

1. Exercise and its Physiology.

By ADRIAN GORDON GOULD, Ph.B., M.D., Assistant Medical Adviser and Assistant Professor of Hygiene in Cornell University; and JOSEPH A. DYE, A.B., Ph.D., Assistant Professor of Physiology in Cornell University. New York: A. S. Barnes and Company. 1932. Pp. 434. $3.

2. Physiology of Exercise.

By FERDINAND AUGUST SCHMIDT, M.D., late Director of Health of Bonn, Germany; and WOLFGANG KOHLRAUSCH, M.D. Berlin. Authorised translation by CARL B. SPUTH, M.D., Dean of the Department of Science and Hygiene, Normal College, A.G.V., Indianopolis Ind. Philadelphia: F. A. Davis Co. 1931. Pp. 216. $2.50.

1. Though no original matter is included in this work, it provides one of the most complete expositions of the subject that has appeared. It is clear that the available literature has been surveyed, and that a careful selection of essentials has been made. The result is encyclopædic, and forms an invaluable work of reference to be studied rather than read. Although the authors express their intention of avoiding technical terms, the book is not easy to read, a condition which arises not from ambiguity nor confusion of expression, but from their determination to be comprehensive and exhaustive. Few students, even of advanced physiology, would readily find themselves able to define the relation between phosphocreatine and the formation of hexosemonophosphate, or the connexion between a rheobase and chronaxie, or the five conclusions which can be drawn from a study of the stimulation of single muscle-fibres. These are examples picked at random among the questions submitted at the termination of the chapters in the early part of the book, and are advanced only to show that complete understanding of the work will demand careful study. The arrangement of the chapters is excellent, and an admirable summary is given at the end of each.

2. It is claimed in the preface that this translation of the late Dr. Schmidt's "Physiologie der Leibesuebungen" is one of the most complete works on the physiology of exercise. Such a claim can hardly be accepted; since, although the general physiological principles relating to exercise are included, they are considered in too superficial a fashion to compare with the elaborate treatises on the subject which a serious student would require. Nevertheless, this book can be warmly recommended as something quite different from the usual presentations, for it is the dynamic and mechanical aspects that are particularly emphasised. It should make an appeal to the student of athletics who is satisfied to skim lightly over the scientific principles, and who is not in a position to assimilate the details of advanced physiology. Considerable emphasis is laid upon the differentiation of constitutional types, and an attempt is made to correlate anatomical characteristics with physiological attainments. Such criteria are supported by reference to famous contemporary athletes, and the arguments are sustained by attractive action photographs and cinematograph studies. In this respect the author is sometimes rather too enthusiastic, as when he aspires to advise a young man upon the kind of sport in which he may expect to excel. "We must be able," he says, "to base our judgment on the expression of his face and on his character and temperament as well as on his physical fitness." But on the whole sound common sense accompanies accurate information. We are thoroughly in accord with the wisdom of the warning that, though much interest attaches to the investigation of the mechanics of the joints and muscles involved in complex activities, little is to be gained by an attempt by minute analysis to explain the forces which make for successful performance of a difficult feat.

The translation has been admirably conducted. The language is vivid, and only occasionally do such expressions as "booster," "lose out," "all in" contribute a transatlantic flavour. Evidence of a critical eye is afforded by occasional corrections of the original text.

REPORTS AND ANALYSES

MARTELL'S BRANDY.

(J. AND F. MARTELL, COGNAC.)

WHEN submitted to analysis this brandy, the well-known "Martell's Three Star," gave the following result:—

Alcohol by volume per cent.	39·54
Proof spirit " "	69·20
Alcohol under proof "	30·8°
Extractives containing sugar per cent.	0·62
Total acidity as acetic acid per cent. ..	0·032
Apparent specific gravity	0·9546°

Secondary products expressed as parts per 100,000 of absolute alcohol:—

Acidity (acetic acid)	33
Aldehydes	25·3
Furfural	5
Esters as ethyl acetate	88
Higher alcohols	135

The analysis of the secondary products shows without doubt that this brandy is genuine, but it is not possible to judge the quality of a brandy from figures alone. Palate and other physical characteristics are still the pre-eminent criteria. The evidence of taste here goes to prove that the sample submitted was an old-matured cognac grape spirit.

We last analysed this well-known brandy some twenty-seven years ago and are glad to be able to state that the evidence both of analysis and taste indicates that the high standard of purity and quality has been maintained, and that the brandy is eminently suitable for medicinal purposes.

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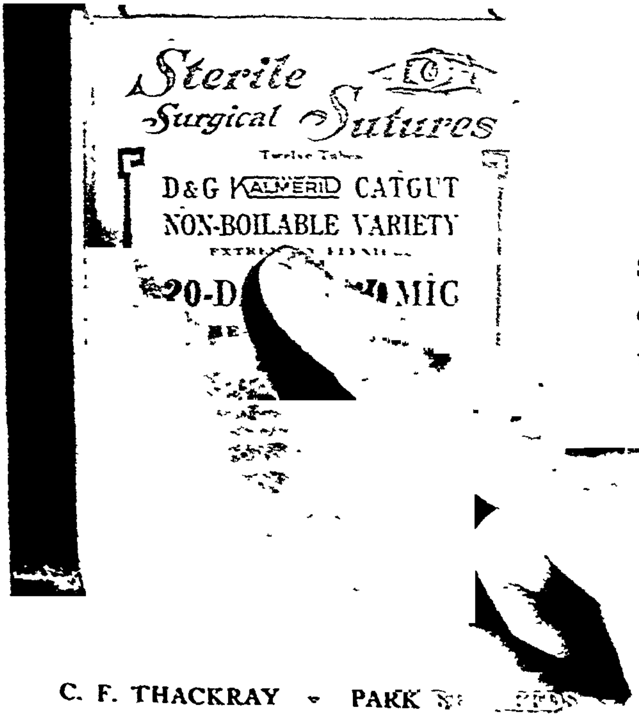

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[See also pp. 17, 30, & 31.]

THE LANCET.

LONDON: SATURDAY, MAY 7, 1932.

HOSPITAL THRIFT.

Lord Lloyd has lent his name and fame to a scheme for meeting the needs of those who now find it difficult to get treatment of serious illness at a price within their means. The attractive features of the British Provident Association for Hospital and Additional Services are that its benefits are fully enjoyed by the subscribers to it—the whole of the funds, after payment of administrative expenses, will go to the provision of benefits; and the benefits themselves are guaranteed and underwritten. The only charitable element in the scheme is the advice and experience of its executive council, which is given free of charge, and a loan by the Pilgrim Trust of funds sufficient to make a start. The benefits offered are in brief these. For an annual subscription of a guinea in the case of a single man or woman; a guinea and a half for married couples; or two guineas for a married couple with one or more dependents, a sum of £5 a week for a period not exceeding three weeks will be available if the subscriber or dependent has been admitted for any reason to a hospital, or to a nursing home for a necessary surgical operation. An addition of 50 per cent. to the subscription will extend this benefit to a period of six weeks. If a subscriber or dependent is attended at home on account of an operation or dangerous illness by a resident nurse, a sum of £3 3*s*. per week is available for not exceeding three weeks. For a consultation, when the medical attendant is in doubt or difficulty, a sum of £1 1*s*. is available towards the fee of a consultant at his rooms, or £3 3*s*. if he visits a patient who cannot leave home. For treatment at the Radium Institute (with which no doubt it is intended to associate the Mount Vernon Hospital) one-half of the charges up to a maximum contribution of £40 is available in any year. A subscriber is entitled to the use of an ambulance up to the value of £1. Finally, a limited proportion of funds is put by to maintain subscribers and dependents in a nursing home in cases of dangerous illness other than a surgical operation. This is the basic subscription and benefit. A graded addition to the subscription entitles a subscriber or dependent to contributions towards surgeons' fees up to a maximum of £25, £50, and £100 respectively. And finally another increment of twelve shillings and sixpence in the case of a single man or woman will provide £1 1*s*. a day up to 20 days towards the fee of a consulting physician in attendance during treatment in a hospital or nursing home. These are the benefits offered, and it is to be understood that they do not include any help towards the fees of a general practitioner, assistance in the case of maternity, tuberculosis, infectious or mental disease, or the services of an ophthalmic surgeon except in respect of some specific disease. While there is no age limit to membership it is obvious that persons suffering from chronic illness cannot be accepted, and except in cases of emergency the benefits are available only upon the recommendation of the medical practitioner in attendance. A subscriber's child is regarded as dependent only up to the age of 16 years. So far the scheme will indemnify the subscriber against the cost of stay in hospital or nursing home, but it does not completely solve his problem unless he can find a private bed available at an economic weekly charge. The Association has come to the conclusion that he cannot rely upon this, and, in addition to the mutual and coöperative scheme, it has evolved a founders' scheme by which an individual, for a single payment of £10, can secure for himself and his family the first call upon a private bed for which he will pay only the actual cost of maintenance. Experience and inquiry has satisfied the directors that a properly equipped private bed costs on the average no more than £1000, and suffices for the sickness of a little more than 100 families. The beds contemplated in this scheme have yet to be built, but in the meantime arrangements have been made with a number of hospitals under which private beds will be immediately available, and more permanent arrangements are in contemplation.

The history of the movement is not devoid of interest. In 1921 the late Dr. Gordon Dill, of Brighton, started a scheme in Sussex to provide hospital maintenance and treatment on the basis of a yearly voluntary subscription of a pound per annum for an individual, thirty shillings for a married couple, two pounds for married persons with children under 16 years of age, the income limit being £250, £400, and £500 respectively. The facilities were available only on the application of the patient's family doctor and with the approval of the members of the hospital staff concerned. Beside hospital treatment the subscription was planned to cover consultation where necessary at home, dental treatment, laboratory investigations, nursing services, and the use of an ambulance. After some initial criticism this scheme gained the approval of the medical profession in Sussex, and began to attract attention elsewhere. Nine of the general and special hospitals in Sussex agreed to cooperate, and the result has proved of equal value to the hospitals concerned as to the subscribing public. Having set his scheme going in Sussex, Dr. Gordon Dill widened his sphere of influence, and with the cooperation of Sir Arthur Stanley, Sir Alan Anderson, Lord Dawson, Mr. McAdam Eccles, and the late Viscount Knutsford, initiated the National Provident scheme for hospital and additional services, giving of his time and energies without stint. In 1923 this national scheme was incorporated in the British Provident Association, and began a decade devoted to collecting and tabulating facts and figures on which to base a comprehensive scheme on a larger scale, Mr. Eccles taking Dr. Dill's place as instigator. In

1927, when King Edward's Hospital Fund for London set up a committee of inquiry, the Association put before it the results of their investigations, with the result that the committee recommended the organisation of an effective scheme of mutual provision for middle-class patients against the cost of treatment and the exploration of a scheme of subscription to the capital cost of the new pay beds which would be needed.

This larger comprehensive scheme has now been launched with the double stimulus of a successful object-lesson and of a period of economic pressure in which the haphazard arrangements of a more bountiful time are unlikely to survive. The Sussex Provident scheme has been a remarkable success; at the end of last year its subscribers numbered 30,374, covering themselves and more than as many dependents. Last year distribution was made in respect of treatment for members to an amount of nearly £15,500 to the coöperating hospitals, representing £2 4*s.* 11*d.* a week for every in-patient in the Brighton area. Coöperation has been secured with practically every hospital in the area, Worthing Hospital having come in during the past year, and arrangements have been made with public assistance committees where treatment is given at transferred hospitals. At the recent annual meeting Sir ARTHUR JENNINGS, in moving a vote of thanks to the chairman, said that nothing was better evidence of the value of the system than the fact that everyone was now trying to imitate it; and Sir PHILIP CRAWLEY, in response, said he thought as time went on hospitals would have to rely more and more on these contributory schemes for their assured income. Voluntary hospitals do not stand to gain so much directly from the British Provident scheme because it has surrendered to the Hospital Saving Association the class of patient entitled by a means test to occupy hospital beds; and this Association contributed last year half a million pounds to voluntary hospitals in London. Indirectly, however, the scheme will benefit these hospitals enormously by preventing their abuse. Outside London, voluntary hospitals are coming to depend more and more upon contributory schemes of various kinds. If the British Provident Association makes good as the Hospital Savings Association has done, they should together help the London voluntary hospitals in the way best suited to their needs.

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UNDULANT FEVER.

THERE are probably few diseases in this country at the present day which present so many features of interest as the condition rightly or wrongly termed undulant fever. To the epidemiologist its incidence and the method of infection are fascinating problems; to the bacteriologist its diagnosis and the differentiation of the various types of invading organisms afford ample scope for inquiry and ingenuity; to the clinician it is a stumbling block of the first order; to the hygienist its prevention calls for a profound study of the main channels of infection; and to the veterinarian, though undulant fever in man is of but secondary interest, contagious abortion of cattle, which is the chief source of infection both in animals and in human beings, is a disease whose control and ultimate eradication are attended by as many difficulties as those of tuberculosis itself.

Our knowledge of the extent of undulant fever in Great Britain is strangely deficient, and there are many who are prepared to minimise its incidence. We do know, however, that during the past five years a number of definite infections with an organism of the brucella group have been recorded; that in the few instances in which complete bacteriological typing has been performed the organism has proved to be of the bovine *abortus* variety; that whenever a number of blood-sera from patients with undiagnosed pyrexia are examined, a smaller or larger percentage are found to contain agglutinins to brucella in a titre probably indicative of active infection; that contagious abortion in cattle is an extremely widespread disease; and that a fairly high proportion of raw market milk contains living *abortus* bacilli. We know that infection with *Br. abortus* frequently gives rise to no clinical symptoms of disease, in this respect resembling infection with the tubercle bacillus. We know, too, that when active disease does occur it is of so protean a nature that a diagnosis is possible only by bacteriological investigation. A few cases, it is true, exhibit the typical pyrexial curve that suggested the name undulant fever, or one of the variants described by Sir W. DALRYMPLE-CHAMPNEYS in our issue of April 9th (p. 791); in most, however, the clinical symptoms are so little characteristic that the disease is diagnosed as influenza, tuberculosis, enteric fever, appendicitis, rheumatism, broncho-pneumonia, or some other condition. With these facts before us it is clear that we can have very little idea at the moment of the real incidence of *abortus* infections. In Denmark, where the Central Serum Laboratory at Copenhagen examines bloods collected from the whole country, and where during the four years 1927–1930 inclusive over 18,000 specimens of sera were examined from patients with undiagnosed pyrexia, cases of undulant fever have been recognised at the rate of four or five hundred a year. In this country it is by no means a routine practice to test Widal bloods against brucella, and probably only a few hundred sera have actually been examined for agglutinins to this organism. If the practice became general of sending in sera for examination from all patients with pyrexia whose cause presented the slightest doubt, and if all sera were tested against *Br. abortus*, it might well be found, as it has been found in Denmark, that undulant fever is commoner than typhoid and paratyphoid fever put together.

Bacteriologists are paying increasing attention to the prevalence of this disease, and it is gratifying to note the excellent studies on this subject which have recently been conducted in Scotland. One of these, by Dr. C. P. BEATTIE, of Edinburgh, is published in our present issue, and another, by Dr. J. SMITH, of Aberdeen, appears in the April number of the *Quarterly Journal of Medicine.*

BEATTIE has examined 28 blood-sera sent in from the city of Edinburgh for Widal examination, and found that five, of which at least four came from patients with undulant fever, agglutinated *Br. abortus* to a titre of over 1/100. He has also examined 47 sera from the surrounding counties, and obtained two significant reactions amongst them. SMITH, in an examination of 373 Widal sera from Aberdeen and the surrounding country, has encountered 11 sera reacting at 1/100 or over to *Br. abortus*, ten of which came from patients with clinical symptoms compatible with those of undulant fever. If we include the figures published by R. CRUICKSHANK and W. J. BARBOUR [1] in the Glasgow area, we find that of a total of 498 Widal sera examined in Scotland no fewer than 16 positive reactions were obtained in patients subsequently shown to be suffering from undulant fever, a proportion of 3·2 per cent. This figure may be compared with that of 3·1 per cent. obtained by M. KRISTENSEN [2] in Copenhagen as the result of examining 17,778 Widal sera. The mode of infection of the patients in Scotland is not altogether certain, though both BEATTIE and SMITH are inclined to the view that milk is mainly responsible. Examining the ordinary retailed raw milk in Edinburgh, BEATTIE found that 29 out of 83 samples, or 34·9 per cent., contained living *abortus* bacilli, while SMITH, in Aberdeen, states that 28·6 per cent. of samples of milk received directly from individual dairy farms was found to be similarly infected. Careful inquiry in the Aberdeen series of cases revealed the fact that a number of the patients had consumed raw milk, and that five of the patients had consumed raw milk which was definitely shown to be infected. Except in one case, direct contact with infected animals seems to have been excluded. It is noteworthy, however, that both in the Scottish and in the English series of cases undulant fever has been observed in town patients consuming very little raw milk, and that only in tea or coffee. How infection occurs in these cases is most puzzling. It seems fairly certain that most people who drink infected milk do not develop active infection, and it must therefore be postulated that some peculiar factors are necessary before the disease can develop in its typical form. What these factors are is a problem urgently awaiting investigation. It is possible that some other vehicle of infection, which has so far escaped notice, may be responsible for some cases. In this connexion it may be remembered that both the Dutch and the American workers have drawn attention to the frequency of *abortus* infections in horses and in dogs. It is as yet too early to say whether these animals are concerned in outbreaks of human disease, but this possibility must be borne in mind. In the United States, particularly in the middle west, hogs are very frequently responsible for human infection, but in Great Britain, so far as we are aware, no case of *abortus* infection in pigs has yet been recorded. Our ignorance of the epidemiology of undulant fever calls for intensive inquiry by all types of workers. Investigations of the nature of those carried out by Dr. BEATTIE and Dr. SMITH will be welcomed by all who are anxious to obtain sound knowledge of this puzzling disease.

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NOISE.

THE supposed influence of noise in causing an increase of nervous illness has often led to demands that the subject should be officially investigated, but as soon as investigation is seriously considered what seems to be a simple problem takes on an extraordinary complexity. That noise in our cities has increased is a ready assumption contradicted by the fact that 100 years ago the congregation of a City church complained that the noise of stage coaches drowned the voice of the preacher, and medical writers of the eighteenth century were emphatic about the alarming increase of nervous disorders. Noise is a nuisance, and to be compelled to raise one's voice or strain one's attention because of extraneous sounds may be worse than annoying. We have definite knowledge about auditory fatigue, such as is experienced after an aeroplane journey, and about that auditory degeneration which follows long exposure to noise and appears as an occupational disease like boilermakers' deafness; and from this positive knowledge it is easy to go on to picture the everyday noises of civilisation producing some physical effect upon nerve structures and thus causing those disorders loosely called nervous.

Some picture of that sort is probably present in the minds of many people who declaim about the curse of noise, but it need only be mentioned to be dismissed. The noises that cause irritation and exasperation possess no physical qualities that can be statistically correlated with those emotional states; indeed, as soon as the matter is approached with the aim of securing material to which statistical methods can be applied a mass of contradictions is at once manifest. To attempt a physical definition of such noises is impossible; what may be a joyous sound to the youthful rider of a motorcycle may be torment to the light sleeper in a quiet village, and that which is music on one side of a wall may become almost a physical assault when it penetrates to the other. There are some sounds that nearly everyone will agree to call unpleasant, and many other sounds that are unpleasant only to some people; so that when complaint is made of a noise the only certainty about it is that the person complaining does not like it. Moreover, experience of individual complaints provides an extraordinary range of aversions. At one end are sounds—that of the pneumatic drill in our London streets, for example—about which there is general agreement; then come sounds—such as thunder—highly disturbing to some people and mildly interesting to others; then at the extreme are stimuli, neutral to most of us, which produce in some individuals reactions of such intensity as to be equivalent to phobic states. Fear of thunder may be of this nature, and was notable as a psychoneurotic symptom in post-war cases. Strongly marked aversions may be so specific to the individual that a personal significance must be assumed, and cases have been recorded in which that significance has been revealed by methods of mental exploration. Experience of noisy trades shows that emotionally stable people are able to adjust to noise and cease to notice it within a day or two, though work now being undertaken by the Industrial Health Research Board may perhaps show that noise has an unfavourable influence upon output.

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[1] THE LANCET, 1931, i., 852.

[2] 2me Congrès International de Pathologie Comparée, Paris, 31, vol. i., p. 68.

It appears then that people suffer from noise because they are nervous, which is a reversal of the assumption that noise produces nervous conditions. Nevertheless there are vicious circles in psychopathology, and though noise may be distressing because of the nervousness of the victim yet it may in turn exacerbate the nervous state. In the tendency to blame noise as a primary cause of nervous breakdown the psychopathologist sees, however, an unhealthy attempt—one among many—to avoid the recognition of the true nature of the complaints grouped under that convenient but obscurantist diagnosis. The chorus of popular approval that greets such blame marks the universal tendency to externalise inner difficulties of emotional adjustment to life, though it may be useful in furthering any movement for the suppression of noise—for noise, like a bad smell, is a nuisance from which we all, nervous or not, have a right to be protected.

ANNOTATIONS

CHEAPER AND QUICKER LAW.

BUSINESS men in London and elsewhere have long demanded that litigation in the High Court be made simpler, cheaper, and quicker. Certain definite suggestions were made, for instance by Mr. Claud Mullins in his book "In Quest of Justice." The two branches of the legal profession criticised the proposals collectively, and now the Rule Committee of the Supreme Court has evolved a "new procedure" for certain classes of not too complicated actions where the stages of litigation are capable of abridgment. A judge will take personal charge of an appropriate case at an early stage and will issue directions as to the documents required, the admissions of fact, the further particulars to be given, and so on. A "summons for directions" has long been a common feature of those early stages of litigation which are so much more tedious and expensive than the layman knows; but hitherto it has been too mechanical an incident. The medical profession will be specially interested in two new provisions: first, that there will be power for the judge to limit the number of expert witnesses, and secondly, that it will be possible to remit to a special referee any question involving expert knowledge—in particular, any question as to the nature, extent, and permanence of an injury alleged to be due to the negligence of a party. The referee's report will be available to both sides; they can agree to accept it in whole or in part without further expense and one can easily imagine circumstances in which it will in effect terminate the litigation. If it is not thus accepted, it will still remain on record for the assistance of the court (subject to criticism by expert witnesses at the trial) and it is to have such weight as the court thinks fit if experts differ and the judge has to decide between them. One can forsee good use being made of the medical practitioner in the character of referee. He will be almost an assessor, in some sort an official independent witness having the authority well-nigh of an arbitrator.

The new procedure is not universally applicable. It will not apply to allegations of fraud or to actions for defamation, malicious prosecution, false imprisonment, seduction, or breach of promise, but will be available otherwise for ordinary actions in the King's Bench Division, the plaintiff's solicitor having authority to certify his case as fit for the new method. It is an approximation to the commercial court practice where Mr. Justice Bigham and others did wonders in narrowing the issues and shortening the hearing. The judge will have a discretion to order trial with or without a jury. Here is a prospect of economy, for trial without a jury means shorter trial, and length of trial means increased expense. Endless appeals are another source of expense and delay. The parties may under the new procedure consent to forego the right of appeal to the House of Lords, thus being content with the decision of the Court of Appeal or they may agree to limit their appeal to questions of law only. Something, too, will be done to meet another grievance of business men by enabling the judge to fix the date of a trial. Apparently two judges will sit continuously in London to take "new procedure" cases; intermittent absence on circuit will therefore not upset fixed arrangements. Documentary evidence, it seems, will be developed and proof by affidavit facilitated, subject to the safeguard for cross-examining a witness in a proper case.

Some of these new provisions will apply also to proceedings in the Chancery Division and some of the new procedure, it should be added, is not entirely new. Individual judges have already managed to introduce features like the limitation of expert witnesses. No one can say how far the new procedure will realise the reformers' hopes until it has been tried on a large scale. Meanwhile it may be accepted as a sensible attempt in the right direction. It goes as far, probably, as reform can be carried without fresh legislation by Parliament.

PLEURAL EFFUSION AND TUBERCULOSIS.

IN a statistical study Dr. J. F. Bratt and Dr. G. Ingebrigtsen have published in *Acta Medica Scandinavica* (vol. lxxvii., fasc. iv., 1932) some interesting facts about idiopathic pleurisy. The patients had been treated in the 12-year period 1918–1929 in a hospital in Trondheim and 313 out of the 388 were traced in the spring of 1931. Practically all these cases were associated with a pleural effusion, and in more than 50 per cent. the febrile period lasted a month or more. The cases were, therefore, as a whole, more serious than the average case of pleurisy treated at home. As many as 124 patients (32 per cent.) could refer to some source of tuberculous infection, but the percentage was much higher among the cases of pulmonary tuberculosis coming under observation in the same period in the tuberculosis service of Trondheim, where 692 (52 per cent.) of 1181 tuberculous patients gave a history of exposure to infection. Dr. Bratt and

Dr. Ingebrigtsen do not, however, jump to the conclusion from these figures that a considerable proportion of the cases of pleurisy were not tuberculous. They confine themselves to the remark that "it would, therefore, seem that the tuberculous clinical material was considerably more exposed than the pleurisy material." Of the 313 persons traced in 1931, as many as 200 were found to be well. In the interval 13 had died of non-tuberculous diseases, and 100 had developed tuberculosis which in 40 cases had already proved fatal. In nearly every case tuberculosis developed within three years of the attack of pleurisy, and it would, therefore, seem that after this interval patients who suffered from idiopathic pleurisy have not much to fear in the matter of pulmonary tuberculosis. This disease broke out a little more frequently among the patients whose pleurisy had been associated with fever lasting more than a month than among those whose febrile period had been shorter.

THE ROYAL ACADEMY.

THE annual display at Burlington House has received this year but a half-hearted welcome from expert judges, who find in the exhibition, despite much competent work, a tendency to retrogression—to an over-reliance upon accepted methods and a distrust of modern ideals. Such criticism cannot be passed fairly upon a distinctly large number of the landscapes. There are scattered up and down the walls many pictures where close observation has resulted in broad effects, and where the display of technical accomplishment has not been made at the expense of a beautiful whole. And these canvasses have gained by the more moderate size generally adopted. But the portraits in many cases merit the judgment. The fault here, when it has occurred, must be shared by the public, especially in the case of presentation pictures. For the representatives of those who have commissioned the pictures usually desire, and are sometimes able to insist, that the rendering of the subject should follow their leading, which has to be taken as the view of the donors. All portraits painted on commission, to meet the pleasure of a heterogeneous group of subscribers, must run the risk of compromise, and it is unfair not to recognise this fact. Sir Arthur Cope's successful portrait of Dr. Alfred Cox has been painted in circumstances that safeguarded him from the risk, for the members of the selection committee were intimately familiar with Dr. Cox in every phase of his activities, and at any point were able to judge how far the picture represented the man and his works. The other important canvass in the exhibition, having a medical man for its subject, is the presentation portrait by Mr. George Harcourt of Colonel Thomas Sinclair, M.P. for Belfast, and emeritus professor of surgery in the Queen's University, having held the chair for nearly forty years. This is not such a challenging picture as Dr. Cox's portrait, because Dr. Cox is depicted in the robes of an LL.D., whereas Prof. Sinclair is in morning dress; but it is a thoroughly competent and sympathetic depiction.

OPIUM SMOKING IN THE FAR EAST.

THE recommendations of the Bangkok conference[1] came under the consideration of the Opium Advisory Committee of the League of Nations at Geneva on April 22nd. It will be remembered that the conference was concerned with the findings of a commission appointed by the League to visit the Far East and to report on the steps which had been, or should be, taken to fulfil the treaty obligations of 1912 and 1925 to restrict and suppress the use of "prepared" opium for smoking. The obstacle presented to such achievement by the extent of the illicit smuggling of opium was also to engage the consideration of the commission. Dissatisfaction was expressed at the failure to fix a time within which the prohibition of import and export of prepared opium, as prescribed by the Hague Convention, should be effected; nor indeed does it appear that a term has been set from which the period of 15 years' grace, conceded by the Geneva Protocol of 1925, was to commence. The delegates of Italy and China denounced the conference and its recommendations as tending to encourage rather than to restrict the sale of opium for smoking. The American delegate urged prohibition of commerce in "prepared" opium, and distrusted the proposal for Government monopoly in the drug. He was twitted by the British representative, who remarked that "prohibition" had not been altogether satisfactory in the States. The export of Indian opium for smoking, though undergoing an annual reduction of 10 per cent., again led to criticism that this was inconsistent with the principles of our dangerous-drugs legislation. Whereas heavy fines and imprisonment are meted out to those found in possession of opium for smoking in this country, considerable sales of prepared opium are still a source of profit to the Indian Government. Doubtless, smuggling from China and elsewhere continues to make the execution of a more stringent policy difficult, if not impossible, and the League's Far East Commission was probably right in saying "the radical method of dealing with illicit traffic in opium is by controlling effectively the cultivation of the poppy, allowing only such quantities to be produced, under international control, as are required for the world's medical and scientific needs."

SOCIOLOGICAL ASPECTS OF OBSTETRICS.

THE increasing interest being shown by obstetricians and gynæcologists in the sociological aspects of their specialty is reflected in the subjects discussed at recent meetings of the North of England Obstetrical and Gynæcological Society and the Edinburgh Obstetrical Society. At a meeting of the former society held in Liverpool on April 1st, Mr. Leyland Robinson, speaking on Insanity in Pregnancy, described his attempt to throw light on the problem by drawing up a questionaire from the obstetric standpoint and submitting it to a number of mental experts. In reply to the question whether child-bearing is an important factor in the ætiology of insanity, most of the alienists consulted failed to agree with the obstetrical view that pregnancy might exert a selective influence upon the mind of the pregnant woman. They attributed physical or mental stress rather to abnormalities of parturition, such as sepsis or toxæmia, with consequent exhaustion, than to the state of pregnancy itself. The following possible indications for the induction of abortion were given: (1) The onset of mania with great violence during pregnancy, since this might lead to dangerous exhaustion and it might be impossible to control the muscular movements. (2) The appearance of mental symptoms in a pregnant woman who had developed insanity during a previous pregnancy. (3) Mental disturbance founded on the conviction that death would ensue during labour, especially if associated with attempts at suicide or homicide. (4) Pregnancy combined with physical and psychical complications. There was little evidence that induction of abortion had any positive therapeutic value in arresting the development of permanent insanity. Mr. Robinson stated that the majority of answers he received were strongly against the induction of abortion on eugenic grounds—that is, for fear of mental deficiency in the offspring—and his general conclusion was that the effect of reproduction upon insanity has received little scientific attention and was for the most part unknown.

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[1] See THE LANCET, 1931, ii., 1143; Feb. 6th, 1932, p. 299; March 12th, p. 581.

This conclusion is in accordance with the doubts expressed by Prof. Sydney Smith, addressing the Edinburgh Obstetrical Society on March 9th, whether conditions such as nervous debility, neurotic and psychoneurotic states which have been put forward as good reasons for inducing abortion really provide just cause for the operation in the present state of the law. What constitutes a just cause is a difficult matter, as there are no legal pronouncements on the point, but up to recent years medical men were of opinion that abortion should be carried out only when it was necessary in order to save the life of the mother or to prevent serious impairment of her health. Lately, he said, there has been growing up a considerable body of opinion which is disinclined to bow to the ethics of past generations, and individual knowledge regarding sex matters has been greatly increased. Prof. Smith gave statistics to show how great was the prevalence of abortion at the present time, and how impossible it was, in this country at any rate, to get correct figures, since only a very few cases of procuring of abortion come to light. In Germany, where there had been a steady fall in the birth-rate with a rise in the abortion-rate, there had been many discussions on the advisability of advocating the legalisation of abortion on grounds other than medical. In Russia the incidence of abortion was so great after the revolution in 1917, and the maternal morbidity and mortality so appalling, that the Soviet Government in 1920 authorised the operation in certain circumstances. In that country abortion might be carried out only by medical practitioners and in public hospitals, it still being a crime for any unauthorised person to interfere with pregnancy; before abortion could be induced, the woman must make application to a representative board before authorisation is granted. In the year 1924–25, 254,000 abortions were carried out in Soviet Russia, whereas in 1929 in Leningrad 58,000 abortions were registered, and only 39,000 births. In Russia it was found that abortions were desired principally by multiparous women, and not among women pregnant for the first time. Legalisation of abortion had caused a diminution in maternal morbidity and death; the number of patients entering hospitals for uterine hæmorrhage was decreasing steadily, and the number of cases of puerperal sepsis was also said to have decreased. The Departmental Committee on Maternal Mortality and Morbidity came to the conclusion that abortion played a serious part in the production of puerperal sepsis and in the causation of maternal morbidity and death. Prof. Smith considered that we could effect an immense saving in maternal life and health if we could prevent ignorant interference with pregnancy, and that this could not be achieved by repressive measures. In his view the law of abortion ought to be changed so as to allow unfortunate and desperate women to place their case before some authority who could, upon sufficient cause being shown, authorise the termination of pregnancy under decent conditions instead of as at present forcing her to place herself in the hands of an ignorant abortionist. The opponents of this view would doubtless hold that those who furtively disobey the law must take the consequences, but if, as seems likely, the chances of permanent damage to the mother are very small where the operation is performed openly, the medical and eugenic indications for sanctioning abortion may have to be extended in the future to include the avoidance of mortality and morbidity.

THE SCIENCE OF EXERCISE.

IN our review columns this week two important works on the physiology of exercise are noticed both emanating from America, though one is a translation from the German. It is not surprising that most works on this subject and on physical culture in general are contributed by American writers, for the cult of physical development has been widely spread and fostered there. Chairs of physical education are endowed with the status accorded to other professorships, and elaborate courses of instruction are framed. Directors of physical education and hygiene—officials whose raison d'être has not yet been recognised in this country—join forces with physiologists and biochemists in a field of investigation where material and opportunities are unlimited. The lack of such subsidised and organised research must not belittle the importance of British activities. One has only to recall the pioneer contribution by Fletcher and Hopkins on lactic acid metabolism. The late Prof. F. A. Bainbridge's "Physiology of Muscular Exercise," published in 1918—the third edition of which was admirably rewritten in 1931 by Bock and Dill of Harvard—has served as an inspiration to all authors of subsequent text-books along the same lines. The classical work of Starling on the heart and of Haldane, Douglas and Barcroft upon respiration, is generally regarded as of supreme authority. Of more recent date A. V. Hill and his co-workers have been conspicuous in their fascinating experiments with Human Machinery, particularly in relation to the subjects of oxygen debt and the viscosity of muscle, while Adolphe Abrahams has been the exponent of what might be regarded as the clinical side of the subject. The liberality with which these British workers are quoted is ample testimony to the authority with which their results are invested. But interest in the theoretical side of athletics has not been so universal as in other countries, and it is time that the problems of physical education had a larger share of attention in academic circles.

THE HAMBLEDEN DEPARTMENT OF ANATOMY AT KING'S COLLEGE.

THE signs of closer amity between the various schools of the University of London were noted by the Earl of Athlone when, as Chancellor, he opened the new anatomy department of King's College which is [illegible]ed after the late Lord Hamblede [illegible] to something a little sharper than friendly rivalry in the relations which at one time existed between King's College and University College was received with amusement, and his expression of the eager coöperation now achieved with appreciation. The department, he said, would stand as a witness of how closely interwoven were the schools of the University; medical students would pass on to King's College Hospital, Charing Cross, St. George's, or Westminster. Mr. W. R. Halliday, LL.D., principal of King's College, said that it was largely owing to the wise guidance as well as to the generosity of the late Lord Hambleden that the College survived a crisis when its very existence was threatened, became incorporated in the University of London. and entered its present phase of steadily increasing responsibilities and usefulness. The major problem of accommodation had been that of the part of the College known as the south-east block, in which anatomy and chemistry existed in cramped and unsuitable quarters. The generosity of the London County Council to the University had enabled the Court to make substantial contribution to the cost of the new department, and to the completion of the first half of the building scheme. The second half of the scheme would be pressed to the earliest possible conclusion as far as funds allowed. The space now vacated by anatomy would have to be remodelled partly to effect improvements in the chemistry laboratories, and partly to provide more adequate common room and refectory facilities for students. The College had acquired a lease of 21, Surrey-street, the corner house facing the Embankment, where chemistry research laboratories would be grouped together and connected with the rest of the department by a bridge like that between the east wing and the north end of the College. The Principal was convinced that the decision against the removal of the College to another site was a wise one, and the dignity of the present buildings would certainly have been difficult to achieve in any other quarter of London. There was general agreement among those present with the Chancellor's praise of the manner in which two storeys had been added to the College building without interfering in any way with the æsthetic appearance of the quadrangle and Somerset House.

TUBERCLE BACILLI IN THE BLOOD.

THE cultivation of tubercle bacilli from the peripheral blood has been brought into prominence during the last two years by Prof. E. Löwenstein, of Vienna, and the two papers by Dr. Cicely Weatherall and Dr. J. N. Cumings, printed at the front of our present issue, are valuable contributions to the subject. Weatherall has first of all tested various methods of culturing the washed hæmolysed stromata of the blood of infected guinea-pigs in a synthetic fluid medium, on Dorset's egg, and on egg medium enriched by glycerin veal broth; for a portion of her tests she used the blood technique of Löwenstein as modified by Dr. H. Moos Schwabacher, who has reported successful results in advanced pulmonary tuberculosis. Weatherall has also made a series of cultivation experiments on the blood of sanatorium patients, most of whom were sputum-positive, and in no case did she succeed in cultivating the tubercle bacillus, though one successful result was obtained at a later stage by the use of Dreyer and Vollum's deep veal broth culture method with tuberculous guinea-pig's blood. Dr. Cumings also reports negative results in attempting 25 blood cultures from patients in which the Löwenstein technique was employed for preliminary treatment of the patient's blood before planting. So far as we are aware, therefore, the only positive results obtained up to the present time in this country with the Löwenstein technique are a small series described by Dr. Moos Schwabacher [1] and by Dr. K. Eckenstein on her behalf.[2] It should be emphasised that the Löwenstein technique consists in two operations: (1) the use of a special method of obtaining a dark brown residue from the blood withdrawn from the patient's vein, by hæmolysing the blood with weak acetic acid and treating with dilute sulphuric acid to destroy contaminants; and (2) cultivating this hæmolysed blood residue on a special egg medium to which potato, asparagin. and Congo-red have been added. This medium was described in our columns last year (1931, i., 1147). Various workers. including Weatherall and Cumings, have departed from the original technique in some details. such as the choice of media, so that the results are not in absolute strictness comparable with those of Löwenstein in Vienna; but they support the figures of some other workers in different parts of the world in that they do not confirm the Löwenstein results. These results may be regarded from two different angles: first, there is the high percentage of positive blood cultures obtained from patients known to be tuberculous; and, secondly, the positive cultures obtained in cases which are generally considered far removed from tubercle, such as acute rheumatism in childhood, disseminated sclerosis, and retrobulbar paralysis. As to the first point, the percentage of positives in known tuberculous patients is considerably higher than is found with the older guinea-pig test, and raises the question propounded by H. C. Sweany and M. Evanoff[3] in America, whether, after all, the culture medium may be more sensitive than the guinea-pig. With uncontaminated material this may conceivably be so, but there are pitfalls in the shape of acid-fast bacilli of feeble virulence, and of acid-fast saprophytes which we believe are by no means as uncommon in occurrence as has been supposed; indeed, one of the most interesting by-products of the work of Löwenstein, Sweany and Evanoff, and others, seems likely to be a wider clinical recognition of these organisms. From the point of view of the pathology of tuberculosis also, the old question is raised anew by Löwenstein's work: what is the nature of the tubercle bacillæmia? Are the bacilli discharged into the blood stream in an intermittent embolic fashion, or are they steadily persistent throughout the circulating blood? Are they present in all types of tubercle at all stages of the disease? We are not yet within sight of an answer to this important question which the new radiological-pathological aspect of X ray film interpretation is rendering highly controversial. As to the second point, it must be borne in mind that Vienna has a high tuberculosis incidence, and we must not expect necessarily to be able to reproduce Löwenstein's figures in this country. The difficulty is to account for the presence of true tubercle bacilli in some of the diseases in which he has found them, and at the same time for their absence, as he records, in healthy persons.

WATER METABOLISM IN EPILEPSY.

IN a leading article a month ago[4] it was pointed out that although artificial dehydration may abolish fits in the epileptic subject, and water retention may produce them, it does not by any means follow that water retention is directly responsible for the spontaneous convulsion. Dr. F. B. Byrom,[5] from a study of the total exchange of water. sodium, potassium, and nitrogen during the different phases of epilepsy, concludes that the spontaneous convulsion is preceded by no changes detectable in 24-hourly measurements of these substances. The convulsion is. however, attended by a marked loss of body-weight, attributable to an extrusion of body fluid principally by the kidneys and to a lesser extent by the skin, a finding which confirms the observation of J. L. Gamble and B. Hamilton (1927), who showed that in epileptic children the excretion of sodium rose during the period of the convulsions, and concluded that this indicated a loss of extracellular water at this time. While it may at first sight seem difficult to reconcile Byrom's findings with those of I. McQuarrie (1929), who showed that ingestion of large amounts of water will precipitate convulsions in epileptic children (especially if diuresis is prevented by injection of pituitrin), he points out that such procedures cause not only change in bulk of body fluid but also secondary derangement of water-electrolyte balance. Indeed, when saline was substituted for water, McQuarrie found in subsequent experiments that convulsions were no longer produced when the fluid was retained. It may reasonably be deduced that the epileptic convulsion is not, as was at one time suggested, directly dependent on the degree of hydration of the body tissues, and that future research along these lines will be more concerned with possible local changes in water-electrolyte equilibrium.

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[1] THE LANCET, 1931, i., 1130, 1212.

[2] Ibid., 1931, ii., 213.

[3] Tubercle, 1930, xi., 401.

[4] THE LANCET, April 9th, p. 782.

[5] Quart. Jour. Med., April, 1932, p. 289.

A CASUALTY DEPARTMENT FORTY YEARS AGO.

Sir D'Arcy Power, in the Finlayson memorial lecture which he delivered recently at Glasgow, described the surgical side of the casualty department at St. Bartholomew's Hospital when it was in charge of Mr. C. B. Lockwood and himself in 1898. It was housed, he said, in the large hall facing Smithfield which is now used as a dining-room for the nursing and domestic staff. One third of the hall was allotted to the surgical and the rest to the medical casualty patients. The entrance to the hall was by six easy steps which led from Smithfield through two half-glazed doors. On the opposite side of the hall and exactly facing these doors was a small dispensary provided with counters and shut off by sash windows. The dispensary so closely resembled the bar of a public-house that many a drunken man was easily persuaded to take a double dose of house physic thinking it was a last glass before going home. It contained stock medicines brought over from the apothecary's shop in brown stoneware jugs holding 2, 4, 6, 8, and 12 gallons apiece. This dispensary was presided over day and night by two nurses—for many years by a mother and daughter of enormous size and weight known to generations of dressers as "the Fairies" because they moved lightly, were never out of temper, ill, or away from duty. They were untrained and were replaced in due course by "Sister Armitage" a highly skilled nurse and a magnificent organiser who had the power of subduing the most noisy and turbulent woman by sheer force of her personality.

The routine of the surgery was invariable. The patients began to assemble on the steps in Smithfield about 8.30 A.M., but whatever the weather there was no shelter and the doors were kept locked until the last stroke of nine. The assistant surgeon on duty entered the hall at five minutes to nine and saw that a porter had posted himself at the men's door and a nurse at the women's door. The two casualty physicians took their seats in the rooms allotted to them and the assistant surgeon stood with his back to the dispensary with the official whose duty it was to mark the time of arrival of the house surgeons and dressers. A queue, or rather a crowd, had assembled by this time on the steps and on the pavement. The man who sold bottles and ointment pots to those who had forgotten to bring them and the woman who was reputed to buy confection of senna and linctus for her open jam tarts, and the cod-liver oil for use in her neighbours' lamps, were in their places in the gutter ready to trade. At the last stroke of nine each door was held ajar to admit one patient at a time. The porter on the male, and the nurse on the female side, asked each patient what he or she complained of and referred him to the physician or surgeon as was thought fit. The diagnosis was rough and unskilled but was usually correct. Patients coming for the first time were directed to seats on either side of the dispensary where they waited until the assistant surgeon had interviewed them; those who had been treated previously took their places in a different part of the hall until they could catch the eye of the dresser under whose care they had been placed by their house surgeon. The prescription paper of each surgeon being of a different colour they were easily differentiated. The hall was usually filled by ten minutes past nine and the junior assistant surgeon having ascertained that the junior house surgeon on duty was present with his eight dressers, and that the senior house surgeon on duty was, at any rate, breakfasting, went to the benches where the new surgical patients were sitting. He made a rapid diagnosis, asked a few pertinent questions, and sorted them roughly into trivial, teaching, and serious. Patients with trivial complaints were handed over to the house surgeon who allotted them amongst his dressers; cases useful for teaching were sent over to the out-patient room there to await the arrival of the assistant surgeon of the day at 12.30; those who were seriously ill were taken straight into a ward. A fresh batch of patients was admitted from the street as often as the benches in the hall were empty until the clock struck ten. The outer doors were then closed though the morning's work often continued until midday or even later. By this time on a damp and foggy morning the atmosphere of the hall was poisonous and the odour pungent.

Bad and wasteful as was this condition of things, it was worse on the medical side. Dr. Robert Bridges, afterwards Poet Laureate, says that he saw and prescribed for 7735 persons during his year of office in 1877, and that 5330 of these were new patients. The average time spent on each case was 1·28 of a minute, and he congratulated himself on having given a separate audience to the troubles of 150 talkative women in three hours and a quarter. An even more wholesale method had been adopted a few years earlier. Mr. Frederick Wood, who was resident apothecary to the hospital from 1847–68, used, it is reported, to go into the hall at nine o'clock daily. As soon as the crowd was assembled and silence had been secured he would invite "all those with a cough stand up," and to them he gave a small cardboard ticket to be exchanged for a bottle of medicine at the dispensary. In like manner "all those with the bellyache stand up," and each received a ticket for house physic or castor oil. Long practice had enabled him to make a fairly correct diagnosis and he used to say with justifiable pride that, so far as he knew, he had never overlooked a case of strangulated hernia or of intestinal obstruction.

The whole system is now swept away. The King, as Prince of Wales, in 1907 opened a block of buildings in which the casualty department is adequately housed in a well-lighted and well-ventilated hall provided with suitable accommodation for male and female patients; in 1914 a corps of efficient almoners was appointed; in 1921 payment was demanded from those who were not absolutely destitute, and a "follow-up" system was introduced in 1922. Since February, 1923. each patient has been interviewed, with the result that there has been a fall in the attendances from 175,000 to 65,000.

THE PRIME MINISTER'S EYESIGHT.

THE Prime Minister has entered a nursing-home for an operation upon his right eye. The condition of the left eye continues satisfactory, but an examination of the right eye undertaken on his return from Geneva by his previous advisers. with the assistance of Sir John Parsons and Sir William Lister, led to the definite opinion that operation upon the right eye should not be further delayed. The condition from which he is suffering has followed the expected course. It has been realised for some time that, sooner or later, operation on the right eye would be necessary, and the choice of the moment to deal with this eye has been dictated not so much by any urgency in the symptoms as by the desire to fit in with the Prime Minister's public engagements.

RELIEF OF THE FAMILY MAN.

ON April 29th and 30th, at a conference promoted by the Family Endowment Society at the London School of Economics, an impressive case was put forward for a reform of our method of payment for work done. The subject was approached from both the economic and the biological aspect, and the speakers included Sir William Beveridge, Prof. Gilbert Murray, Miss Eleanor Rathbone, M.P.. Mr. R. A. Fisher. F.R.S., and Prof. Julian Huxley. It was shown that much greater progress has been made towards the desired object in many European countries, and in Australia and New Zealand, but that a patchwork beginning has been made in Britain. Put briefly. the aim is to replace the present system of equal pay for equal work, irrespective of family responsibilities, by one based on the principle of an equal standard of living for equal work, and to apply this principle not only to manual workers and artisans, but also to civil servants. members of the teaching professions, ministers of religion, and all salaried employees. At present, in this country the so-called "living" wage is supposed to maintain a man. his wife, and three children, and under this system a large proportion of the children are left below a reasonable standard of living. Three methods of financing family allowances were discussed at the conference. Family endowment paid for out of general taxation is impossible under present financial circumstances, though New Zealand makes allowances for children in excess of two in the family, when the income falls below a certain level. In Australia the tendency is towards a second method of fixing a basic wage for the maintenance of man and wife, and supporting the children by a levy on the employers of a certain percentage of the wages bill. This method. strengthened by "equalisation pools," so that an employer loses nothing by employing married men, is making rapid and continuous progress in France and Belgium. A third method is to extend the compulsory contributory insurance system to family endowment, and a scheme was described under which a weekly contribution of 9*d*. each by the employer. employee. and the State would produce an adequate maintenance allowance for the children. The conference was attended by a large number of representatives of bodies interested in social welfare, many of whom were evidently surprised to hear of the progress made towards family endowment in other countries. From the eugenic aspect it was pointed out that the scales are at present heavily weighted against parenthood. except in the case of the reckless section of the population. and that family endowment would gradually remedy the differential birth-rate by discouraging undesirable birth control on the one hand, and by tending to make responsible citizens of the reckless on the other. To those who might think the present time is inopportune for new schemes, it was pointed out that wages and cost of living are both changing and that, when "cuts" are restored. the family allowance system might well be considered. The case of the teachers was specially mentioned. Sir William Beveridge in his opening remarks emphasised family endowment as the best means of abolishing poverty and mentioned that all politicians paid it lip-service and professed approval. The Family Endowment Society (52. Romney-street, S.W.1) has much information in pamphlet form for those who wish to study this question. which all public health workers must regard as one of front-rank importance.

THE next session of the General Medical Council will commence at 2 P.M. on Tuesday, May 24th; under the Presidency of Sir Norman Walker.

THE Linacre lecture is being delivered at Cambridge to-day, Friday, May 6th. by Dr. J. J. R. Macleod, F.R.S.. Regius professor of physiology in the University of Aberdeen. His subject is the Control of Carbohydrate Metabolism.

IN the report of the National Physical Laboratory for 1931. reference is made to many activities which have a bearing on medical problems. Among the most important of these is the inspection of X ray departments in hospitals to ensure the safety of workers. This service is said to be widely used and appreciated. The laboratory is responsible for the custody of the radium belonging to the National Trust, and this work involves careful record of the history of the units into which the radium is divided. The difficulties relating to the establishment of an international unit of X rays (the Röntgen), which is essential for the advancement of X ray therapy, have now been resolved.

Sir William Wheeler, past President of the Royal College of Surgeons in Ireland, has accepted the invitation of the board of regents of the American College of Surgeons to deliver the Murphy oration in surgery at the opening meeting of the clinical congress, to be held in October next. The first John B. Murphy oration was delivered by Sir Berkeley Moynihan in 1920. and he was followed in subsequent years by Dr. William J. Mayo, Prof. Raffaele Bastianelli. Dr. George W. Crile. Drs. N. D. Royle and John L. Hunter. Sir Arbuthnot Lane, Prof. Archibald Young. Sir John Bland-Sutton. Prof. Vittorio Putti, Prof. D. P. D. Wilkie. Prof. G. Grey Turner, and Prof. A. H. Burgess.

THE Minister of Health. with the approval of the Prime Minister. has appointed Sir Arthur Lowry to act as Deputy Secretary to the Minister of Health. while Sir Ernest Strohmenger is seconded for service in the Treasury.

SPECIAL ARTICLES

UNDULANT FEVER PRODUCED BY BRUCELLA ABORTUS:

THE POSSIBILITY OF INFECTION FROM MILK AND THE PROBABLE EXTENT OF INFECTION.

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Much interest has recently been shown in the reports of cases of undulant fever in this country due to the *Brucella abortus*.

The first possible mode of infection is through direct contact with animals harbouring the organism. Farmers, veterinary surgeons, abattoir workers, and employees in the meat-packing industry may be thus infected. This is generally agreed to be the most potent source of infection and numerous cases have been reported from the United States and the Continent (Orr and Huddleson,[1] Kristensen,[2] Bierring,[3] Dubois and Sollier [4]). The proportion of the population of this country, however, exposed to this risk must be small.

The second possible source of infection, the drinking of milk containing this organism, must be regarded as the commoner, and it has been long known that *Br. abortus* localises in the udder of infected cows and may persist for long periods. Apart from the investigation of cow's milk in Manchester, carried out in 1926 by Wilson and Nutt,[5] little information has been available as to the proportion of milk in this country containing *Br. abortus*. An investigation into the prevalence of tubercle bacilli in milk carried out during the past year for the Department of Health for Scotland has provided the opportunity of inquiring also into the frequency of the occurrence of *Br. abortus* in market milk. The results obtained are of some value in amplifying the information already available.

The milk samples received were of three classes: pasteurised, "retailed," and "raw." The "retailed" milk was that sold in dairies in the city of Edinburgh. In many cases the sample was a mixed one containing milk from more than one source. The "raw" milk was that delivered to dairies and each sample came from a single source.

Methods.—The centrifuged deposit from 50 c.cm. of milk was emulsified in 6 c.cm. of saline solution. Of this emulsion 3 c.cm. were injected intramuscularly into each of two guinea-pigs. For the purpose of the primary inquiry regarding the presence of tubercle bacilli the guinea-pigs were killed four weeks and eight weeks respectively after injection. In examining for *Br. abortus* the second guinea-pig was used.

The spleen of the animal was seared with a copper spatula and cultures made from it on serum agar plates. These plates were incubated for three days at 37° C. in a jar from which 10 per cent. of air had been exhausted and replaced by CO_2 (Smith,[6] McAlpine and Stanley,[7] Wilson [8]). Colonies resembling those of *Br. abortus* were then subcultured on serum agar slopes which were incubated for three days in an atmosphere with 10 per cent. CO_2. Films were made from these cultures, and if the organism present resembled *Br. abortus* it was tested for the absence of fermentation properties on glucose and its agglutination by *Br. abortus* antiserum.

The results obtained were as shown in Table I.

As the procedure of isolating the organism from the inoculated guinea-pig took some time and involved detailed cultural tests it was hoped to show that corresponding results could be obtained by demonstrating the presence of specific agglutinins in the guinea-pig's serum. The results of the tests were as given in Table II.

Table I.

Type of milk.	Samples examined.	Positive.	Percentage positive.
"Raw"	86	17	19·8
"Retailed" ..	83	29	34·9

Table II.

Type of milk.	Samples examined.	Inoculated animals giving positive agglutination results.	Percentage.
"Raw"	63	14	22·2
"Retailed" ..	56	19	33·9

The lowest titre accepted was a serum dilution of 1 in 120, but the agglutination titre was usually much higher (1 in 480 to 1 in 3200). On two occasions the end titre was only 1 in 120, but in both these cases the result was confirmed by the culture of the organism from the guinea-pig. For control purposes the sera of 66 animals which had been inoculated with pasteurised milk were examined. None showed any agglutination. In some, but not in all, cases the serum was tested twice; once unheated and once after being heated to 56° C. for 30 minutes in order to eliminate the possibility of non-specific agglutination.[12] The general effect of heating the serum was to cause a slight fall in the titre. The impression gained, supported by the findings in the sera of animals inoculated with pasteurised milk was that this precaution was unnecessary.

The percentages obtained by cultural and serological methods showed a fairly close approximation.

An analysis of the findings elicited the following discrepancies. From the guinea-pigs inoculated with "retailed" milk the organism was isolated in five cases when the serological test proved negative. In no case when the serological test was positive did culture prove negative. These results would appear to be in accord with the findings of Carpenter [9] in human cases of undulant fever due to *Br. abortus*. Out of five cases in which he recovered the organism by blood culture he succeeded in showing the presence of agglutinins in three only.

The results obtained among the guinea-pigs inoculated with "raw" milk were at variance with the preceding results. In this class agglutinins were demonstrated in three cases when culture failed. In every case when agglutinins were present the organism was obtained on culture.

The figures obtained show a high proportion of milk to contain the *Br. abortus*. By cultural method the percentage for raw milk was 19·8 per cent. and for retailed milk was 34·9 per cent. As has been explained some of the "retailed" milk samples were "bulked" specimens which accounts for the greater prevalence in this group. The proportion found is considerably higher than that reported by Wilson and Nutt [5] in Manchester in 1926: 5·7 per cent. of unmixed milk and 8·8 per cent. of mixed milk.

From the small number of samples examined no definite conclusion can be drawn as to the relative reliability of cultural methods in inoculated guinea-pigs and the demonstration of agglutinins in their serum. The indication is, however, that the demonstration of agglutinins in the serum of guinea-pigs is likely to afford a sufficiently reliable indication of the proportion of milk infected. It is a method which can readily be combined with the routine biological test for the presence of the tubercle bacillus in milk.

CLASSIFICATION OF STRAINS.

In view of the indications that the porcine type of *Br. abortus* is more pathogenic than the bovine variety (Huddleson and Hallman [10]) and that cattle may be infected with the porcine type (Plastridge and McAlpine [11]) it was decided to attempt to classify the strains isolated. Huddleson's dye plate method was used.[1]

In this method three nutrient agar plates are used, the first containing 1 : 100,000 parts of methyl-violet, the second 1 : 50,000 parts of basic fuchsin, and the third 1 : 50,000 parts of thionin. These will be referred to as V., F., and T. Typical reactions should be :—

—	V.	F.	T.
Bovine	+	+	−
Porcine	−	−	+++

The number of + marks signifies the relative amount of growth.

The results with 36 strains so tested showed them all to be of bovine type. Confirmation of this was found in the fact that during their first subcultures none of these strains grew freely under normal atmospheric conditions, but required a CO_2 concentration of 10 per cent. For control purposes nine bovine and six porcine strains obtained from the National Collection of Type Cultures were tested and found to give the reactions characteristic of their type.

The possibility of infection from a milk-supply in which over 30 per cent. of unsterilised mixed milk contains *Br. abortus* is obviously great.

DISCOVERY OF CASES.

It was thought that some indication of the prevalence of *abortus* infection would be obtained by examining blood samples sent to the laboratory for the routine Widal examination, such samples coming from patients whose symptoms were those of a continued fever. The blood was obtained partly from the city of Edinburgh and partly from the neighbouring counties.

Twenty-eight specimens from the city were examined. Of these, five agglutinated *Br. abortus*. The agglutination titres were: Case 1, 1 in 240; Case 2, 1 in 480; Case 3, 1 in 960; Case x, 1 in 240; Case 4, 1 in 6400. Two further samples agglutinated *Br. abortus* in a dilution of 1 in 30, but this was considered within normal limits. Three of the samples examined gave a diagnostic reaction with *B. paratyphosus* B. In none of these was agglutination of *Br. abortus* obtained.

Forty-seven specimens from the surrounding counties were examined. Of these, two agglutinated *Br. abortus* in high dilutions. The agglutination titres were: Case 5, 1 in 2500; Case 6, 1 in 1920. Four samples gave agglutination in a titre of 1 in 30, but as stated above this is not a significant result. Eight of the specimens submitted gave a diagnostic reaction with *B. typhosus*, two with *B. paratyphosus* B, and one *B. dysenteriæ* (Flexner-Y). None of these agglutinated *Br. abortus*.

The following data obtained from medical men in charge of the cases are illustrative.

CASE 1.—Oct. 28th, 1930. Male, aged 45. Tailor. Chief symptoms: severe headache and sweating, general body pains, high temperature without remissions. Duration of illness six weeks. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 240. This case was at first considered one of influenza.

CASE 2.—May 19th, 1931. Nurse, aged 54. Onset insidious, occipital headache, pain in back of head and neck, shivering in forenoon once at commencement of illness, spleen and liver not enlarged. Crepitations at bases of both lungs. Pulse-rate 88. Morning temperature subnormal; evening, 101° to 101 6° F. Ill for one month and in poor health for six to eight weeks thereafter. Drank unpasteurised milk daily but not in large quantities. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 480.

CASE 3.—June 9th, 1931. Illness resembled a sharp typhoid infection and was followed by a long convalescence. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 960.

CASE X.—Jan. 1st, 1932. Boy, aged 11. Diagnosis established of broncho-pneumonia. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 240.

CASE 4.—Feb. 29th, 1932. Male medical student, aged 25. Onset sudden. Frequent rigors. Temperature down in morning, up in the early afternoon, down in the late afternoon, and up at night, 101·8° to 102° F. Considerable sweating at night. Severe frontal headache at night. Pulse-rate 88. No backache, no joint or muscle pains. Spleen and liver not enlarged, no chest symptoms, constipated since onset of illness.

Never drank milk by itself but took it in tea and coffee. Had worked with cultures of *Br. abortus* some years previously. Was in U.S.A. during summer but returned in September, 1931. Had no illness while in U.S.A. Only previous illness bronchitis two years ago. Widal reaction negative. *Br. abortus* Bang agglutinated by serum 1 in 6400, *Br. abortus* (hog 900) 1 in 800, *Br. melitensis* Arkwright 1 in 800, *Br. abortus* Barker 1 in 6400. (Emulsions all phenolised.)

Blood culture, March 3rd, 1932, 5 c.cm. blood inoculated into each of two flasks containing 50 c.cm. Stafseth's liver infusion broth.[14] One flask incubated for seven days in *atmosphere of 10 per cent.* CO_2. *The other incubated for* seven days under ordinary atmospheric conditions. At the end of this time the flask which had been kept under atmospheric conditions showed no growth. The flask which had been incubated in 10 per cent. CO_2 was contaminated by an aerobic sporing organism. It was discarded. The flask which had been incubated under normal atmospheric conditions was now incubated for a further seven days in 10 per cent. CO_2. The organism was then isolated. On subculture it would not grow under ordinary atmospheric conditions but required a concentration of 10 per cent. CO_2. On Huddleson's dye plates it gave the reaction of a bovine type. The blood for this examination was taken during an apyrexial period.

Urine culture, March 3rd, 1932. Method as above—organism not isolated.

Clinically this was an undoubted case of undulant fever and the diagnosis was confirmed by the bacteriological examination. The source of the infection is not clear. His stay in the United States of America and his handling of *Br. abortus* might seem too distant to be related to the illness. He had no previous illness which might have been a previous attack. This case was first diagnosed as influenza and later, when the temperature did not abate, as paratyphoid fever.

CASE 5.—March 3rd, 1931. Male, aged 38. Engineer. Onset insidious. When first seen by doctor had been unfit for two months. During this time complained of afternoon fatigue and night sweating. When seen complained also of pain in joints and in calves of legs. Had a cough. Temperature showed marked daily remissions—evening up to 103° F. Pyrexial attacks showed an average period of ten days with two-day remissions between attacks. Liver and spleen not enlarged. Constipated. Condition looked better than temperature warranted. Drank large quantities *of unpasteurised milk. Widal* reaction negative. *Br. abortus* Bang agglutinated by serum 1 in 2500, *Br. abortus* Barker 1 in 2560, *Br. abortus* T 1 in 1280, *Br. melitensis* Arkwright 1 in 160 (emulsions all of live organisms). Blood culture negative.

CASE 6.—June 25th, 1931. Male, aged 36. Soap-worker. Onset insidious. Duration of illness, 12 weeks. Intermittent headache, backache in left lumbar region, no joint pains, no pain in calves of legs. Rigors during first few days but not thereafter. Afternoon fatigue, night sweating. Temperature: generally raised in the evening and down in morning. Pulse-rate: generally increased. Cough: slight congestion at base of left lung. Skin rash chiefly in iliac regions. Was away from home during the month prior to onset of illness. Widal reaction negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 1920.

The number of cases is too small for accurate deductions, but would seem to indicate that a definite proportion of illness which gives rise to the suspicion of enteric fever is undulant fever. If the three cases of paratyphoid B infection and Case x, diagnosed as broncho-pneumonia, are excluded from the city of Edinburgh series, it is found that out of 24 cases of suspected enteric four were cases of undulant fever. Similarly if from the series outwith the city the cases of enteric and dysentery are subtracted, it is found that out of 36 cases two were cases of undulant fever.

No inquiry has yet been carried out in the Edinburgh area as to the percentage of persons not suffering from a febrile illness who give agglutination reactions with *Br. abortus*. A comparison may, however, be made with the figures obtained by Cruickshank and Barbour [12] in Glasgow last year. Of 1522 sera examined they found 25 (or 1·6 per cent.) gave agglutination in a dilution of 1 in 20 or over and 11 in a dilution of 1 in 40 to 1 in 80.

TWO OTHER CASES.

Two cases occurring in the city of Edinburgh during the period under review, but not included in the above series, were investigated also in this laboratory by Dr. H. J. Gibson. In these the main features were:—

CASE 7.—Jan. 7th, 1931. Male, aged 34. Rubber worker. Condition discovered during examination for life insurance. Temperature found to be 102° F. but felt well and was working. Previous week had shivery attack once in late forenoon. After Jan. 7th feeling of chilliness about midday. Afternoon fatigue, night sweating. Evening temperature up to 102° F. Pyrexial periods of five to seven days with one or two day intervals. Bronchitis at commencement. No arthritis. Constipated. Spleen not enlarged. Duration of illness six weeks. No relapses. Widal reaction four weeks after onset, negative. *Br. abortus* Bang (emulsion of live organisms) agglutinated by serum 1 in 3200. Blood and urine culture negative. No contact with animals. Home milk-supply pasteurised. Nineteen days prior to onset spent a day in Lancashire and drank raw milk there. (Case reported by Wishart and Gibson.[13])

CASE 8.—Sept. 6th, 1930. Male, aged 29. Customs officer. Onset: shivering attack while on motor-cycle tour. Severe headache, generalised pain in back and limbs. Remained indoors for a week; considered it influenza; did not see doctor. Recommenced work; morning felt fit, late afternoon chilliness, afternoon and evening feverish and unfit. Severe night sweating. Worked for two weeks and then saw doctor. Temperature when seen by doctor at evening surgery 104° F. Stiffness and pain on movement of shoulders and knees; muscular pain, especially in calves of legs. Night sweating severe throughout. No chest symptoms, no enlargement of spleen. Temperature: daily remissions. Evening, 99·2° F. to 100° F. Period of one week high temperature followed by two day remission, then two weeks high temperature followed by eight day remission, then one week high temperature. Widal reaction, seven weeks after onset, negative. *Br. abortus* Bang agglutinated by serum 1 in 240. A week later *Br. abortus* Bang 1 in 480, *Br. abortus* porcine type 1 in 200 (emulsions all of live organisms).

During work in docks dealt with imported bacon and scrap pork, but rarely, if ever, touched the meat. Home milk-supply pasteurised. In Glasgow, 27 days before onset, drank raw milk.

CASE 9.—August 13th, 1931. Male, aged 28. Medical man. A worker in this laboratory became infected with the disease. For four weeks he had felt unfit but continued at work. On August 13th his serum was examined and found to agglutinate *Br. abortus* Bang up to a titre of 1 in 1600. Widal reaction negative. His illness was typical and of a severe form, and he suffered during convalescence from arthritis of one of the small joints of his hand.

On August 28th *Br. abortus* Bang agglutinated by serum 1 in 1600. *Br. melitensis* 1 in 400. On Oct. 6th *Br. abortus* Bang 1 in 800. Convalescent. (Emulsions all of live organisms.)

Blood culture was performed on August 28th. 5 c.cm. blood inoculated into 50 c.cm. Stafseth's liver infusion broth [14] incubated for five days in atmosphere of 10 per cent. CO_2. Organism isolated. Grew readily under ordinary atmospheric conditions in subcultures. On Huddleson's dye plates gave reactions of porcine type.

In this case the source of infection was doubtful. He had been working with cultures of *Br. abortus* but not for some time prior to the onset of his illness.

That the organism may stimulate the production of specific antibodies without giving rise to illness is shown by my own experience. After working with infective material and cultures for ten months I found on August 13th that my agglutination titre for *Br. abortus* Bang was 1 in 320. On Jan. 18th, 1932, it was 1 in 400. On this date the serum of a laboratory assistant who had handled similar material to the same extent was examined. It gave no agglutination.

RESULTS OF THE INVESTIGATION.

The investigation is being continued and an endeavour will be made to determine what accessory factors are concerned in human infection. Although the proportion of raw mixed shop milk in Edinburgh containing *Br. abortus* has been shown to be about 35 per cent., only a very small number of cases of the disease have come to notice. The porcine strain of the organism is considered to be the more pathogenic to man, and in one of the two cases in which the organism was cultured it was of porcine type. But out of 36 strains cultivated from milk samples none would appear to be of porcine type. Plastridge and McAlpine [15] in an examination of 129 strains of *Br. abortus* from human sources found 63 to be bovine and 66 porcine. Taking into account the large amount of raw milk drunk and the comparatively small number of people handling pigs these figures would seem to be out of proportion to the chances of infection. Plastridge and McAlpine, however, justly point out that the porcine strain is more easily cultivated than the bovine. The relative virulence of strains isolated from milk have to be examined, and also the question of natural immunity.

As far as the investigation has gone it would seem to show:—

(1) That the possibility of infection from retailed raw milk is considerable. In Edinburgh 34·9 per cent. of such milk samples have been found to contain *Br. abortus*.

(2) That the test for the presence of *Br. abortus* agglutinins in the sera of guinea-pigs inoculated with milk provide a sufficiently accurate method of estimating the prevalence of *Br. abortus* in milk samples. This method can easily be adopted during the biological examination of milk for tubercle bacilli.

(3) That of 36 strains of *Br. abortus* isolated from milk in Edinburgh all were of bovine type.

(4) That a definite proportion of febrile illnesses which resemble enteric fever is undulant fever. In Edinburgh out of 24 such cases four were cases of undulant fever.

My thanks are due to those physicians in Edinburgh and neighbourhood who have permitted me to include their cases, to Dr. H. J. Gibson for the reports on Cases 5, 7, and 8, and to Prof. T. J. Mackie for his encouragement and advice. I also have to acknowledge the courtesy of the

Curator of the National Collection of Type Cultures in supplying me with strains of *Br. abortus*.

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BRITISH ORTHOPÆDIC ASSOCIATION.

THE NOTTINGHAM MEETING.

AT the spring meeting of the British Orthopædic Association in Nottingham on April 22nd and 23rd, a large series of cases was demonstrated by Mr. F. CROOKS and Mr. MALKIN at the General Hospital and at the Harlow Wood Orthopædic Hospital, and three clinical problems were discussed.

Suppurative Arthritis of the Hip.

Mr. FREDERICK CROOKS (Nottingham) presented a series of 12 cases of pyogenic infection of the hip-joint. Early drainage was necessary, he said, not only to save life, but to minimise epiphyseal destruction. The classical route for drainage was by a posterior incision, but in half of the cases abscesses pointed in front of the joint and an anterior incision had been used. After operation the limb was fixed in abduction, and traction was maintained to prevent pathological dislocation. There was no mortality, and the end-result in 8 of the 12 cases had been a stable hip. In infants there was usually destruction of the epiphysis and of the neck of the femur, and often an unstable dislocation was inevitable.

Mr. D. MCCRAE AITKEN (London) advised a short spica and not a calliper as an ambulatory splint. In unstable cases the ring of the calliper pushed the neck of the femur out of the acetabulum and aggravated the tendency to dislocation. Operative stabilisation should be performed when the patient was 14 or 15 years of age by constructing a new roof over the upper end of the femur.

Mr. R. C. ELMSLIE (London) doubted whether any attempt at operative stabilisation was of value. The only measure he would advise was a bifurcation osteotomy, and although this stabilised the limb satisfactorily it had the serious disadvantage of increasing the shortening. The best end-result which could be secured was a bony ankylosis in good position.

Dislocation of the Patella.

Mr. S. A. S. MALKIN (Nottingham) reported seven cases of outward dislocation of the patella. In five cases the displacement was habitual and of congenital origin, and in two cases recurrent. Normally, in consequence of the erect posture of man, the oblique axis of the quadriceps maintained an angle with the vertical axis of the patellar ligament, and favoured outward displacement of the patella. This was still further exaggerated if knock-knee was present. Successful treatment demanded not only replacement of the patella, but realignment of the quadriceps with the patellar ligament; in congenital cases it was necessary to dissect and free the vastus externus, and in all cases it was advisable to displace the tubercle of the tibia inwards and downwards. The downward displacement compensated for under-development of the external condyle of the femur. If knock-knee was present, an osteotomy to correct it was essential, but the correction could be more easily secured in congenital cases by deferring osteotomy until after replacement of the patella and realignment of the quadriceps. The operation, which he had learnt from Mr. Elmslie, had been performed in six cases. After several years there had been no recurrence of the dislocation, and a normal range of knee movement was restored.

Mr. ELMSLIE said that the important features of his operation were (*a*) dissection and replacement of the vastus externus, (*b*) displacement of the tubercle of the tibia inwards and downwards, (*c*) transference of a pedicle of joint capsule from the inner to the outer side, (*d*) the construction of a flap of capsule to hold the rectus femoris inwards.

Mr. H. A. T. FAIRBANK (London) said that osteotomy of the femur was always necessary in habitual dislocation, but not always in recurrent dislocation of the patella. He had frequently noticed in recurrent dislocation that although there may be no genu valgum with the knee extended, this deformity was evident when the knee was flexed.

Fractures of the Spine.

Mr. CROOKS reported 44 recent cases of fracture of the spine. The mortality was 25 per cent., and in almost 50 per cent. of the cases the spinal cord had been injured. Reduction of the fracture was advocated, and emphasis was laid on the ill-effect of allowing patients to lie in bed for several weeks without active treatment. In such circumstances functional complications commonly appeared, and energetic exercises in the gymnasium were necessary to combat this. Twelve cases were demonstrated of crush fractures of the spine which had not been seen until several weeks after the accident, so that a slight kyphotic deformity remained. Although good movements were restored, only one of the 12 was free from pain, and only two had resumed work.

Mr. C. HOPE CARLTON (London) said that the results of treatment of crush fractures of the spine had been greatly improved since the introduction of the technique described by Watson Jones, but he had found difficulty in some cases in correcting the last few degrees of wedging of the vertebra.

Mr. W. A. COCHRANE (Edinburgh) said that he had used Watson Jones's technique in reducing fractures of the spine, but in two cases paralytic ileus had arisen, and he attributed this to the hyperextension, and the lack of abdominal support during reduction. The use of a ventral hammock assisted in preventing this.

Mr. R. WATSON JONES (Liverpool) drew attention to the constancy with which pain persisted, if the wedging of the crushed vertebra was not corrected. Records were now available of over 50 fractures of the spine which had been reduced by his method, and provided that the deformity was fully corrected and recurrence prevented by the wearing of a plaster jacket for a sufficiently long period, there was no pain, and fully 75 per cent. of cases resumed heavy work. Consolidation of fractured vertebræ was slow, and the plaster jacket should be retained in simple crush fractures for four months and in extensively comminuted fractures for six months. Energetic exercises could be practised throughout this time, and in uncomplicated cases recumbency was not necessary for more than a few days. Paralytic ileus might arise in any case where a plaster jacket was applied under anæsthesia, and was due not to the hyperextension, but to the anæsthetic and too liberal administration of morphine. No anæsthetic should be used.

Mr. S. Blundell Bankart (London) emphasised the necessity for immediate reduction. The pain of an unreduced crush fracture of the spine could only be relieved by operative fusion of the affected area with a bone graft. The best treatment for fractures of the lumbar transverse processes was to ignore the fracture and treat the case as a simple muscle injury, in order to avoid functional complications and to prevent adhesion formation.

Mr. W. H. Trethowan (London) said that persistent chronic backache was inevitable if crush fractures of the lumbar spine were not reduced. Since the pain was due to mal-alignment of the spine, he doubted whether bone grafting would always relieve it.

Mr. Naughton Dunn (Birmingham) advocated temporary splintage of the spine in order to decide whether bone grafting would be successful or not. Operative treatment could only succeed in those cases where pain was controlled by wearing a spinal support.

MEDICINE AND THE LAW.

A Doctor's Dog.

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crush fractures for four months and in extensively comminuted fractures for six months. Energetic exercises could be practised throughout this time, and in uncomplicated cases recumbency was not necessary for more than a few days. Paralytic ileus might arise in any case where a plaster jacket was applied under anæsthesia, and was due not to the hyperextension, but to the anæsthetic and too liberal administration of morphine. No anæsthetic should be used.

Mr. S. **BLUNDELL BANKART** (London) emphasised the necessity for immediate reduction. The pain of an unreduced crush fracture of the spine could *only be relieved by operative fusion of the affected* area with a bone graft. The best treatment for fractures of the lumbar transverse processes was to ignore the fracture and treat the case as a simple muscle injury, in order to avoid functional complications and to prevent adhesion formation.

Mr. W. H. **TRETHOWAN** (London) said that persistent chronic backache was inevitable if crush fractures of the lumbar spine were not reduced. Since the pain was due to mal-alignment of the spine, he doubted whether bone grafting would always relieve it.

Mr. **NAUGHTON DUNN** (Birmingham) advocated temporary splintage of the spine in order to decide whether bone grafting would be successful or not. Operative treatment could only succeed in those cases where pain was controlled by wearing a spinal support.

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LONDON VOLUNTARY HOSPITALS COMMITTEE.

A YEAR'S WORK.

This Committee [1] which was appointed by London voluntary hospitals for the purpose of consultation with the London County Council, as provided by Section 13 of the Local Government Act, 1929, has issued the following report for the year ending March 31st, 1932.

During the period under review the Committee have been in constant communication with the Central Public Health Committee of the London County Council. Important decisions have been arrived at.

Acting upon the suggestion of the Voluntary Hospitals Committee, it has been agreed between the two committees to conduct a survey of the medical, surgical, and ancillary services in the county. The standing committee of the metropolitan borough councils have expressed their willingness to coöperate by supplying information relating to services for which the borough councils are responsible. The survey, which is in progress, will show the number of institutions in each area, distinguishing between municipal and voluntary; the accommodation available for each class of case; the staffing of each institution; the area from which patients are drawn; the facilities for extension; the need for further developments and other useful details. The task is one of considerable magnitude, as the survey involves institutions comprising some 100,000 beds. It is, however, hoped that it will be completed in the course of the next two months. It will provide the first authoritative description of the medical, surgical, and ancillary services of the county. The need for coördinated information is obvious. Without it the best use cannot be made of the facilities provided by each system, overlapping cannot be avoided, and economical effective progress is impossible. Further, without such a survey it is impossible to give effect to Section 13 of the Local Government Act, 1929, which provides for consultation between the municipal authority and the voluntary hospitals within its area.

Discussions have taken place between the two committees concerning medical education. As a result the Public Health Committee decided to continue existing arrangements between individual teaching hospitals and municipal hospitals. The extension of these arrangements is now being considered by both committees, and it is hoped that some more thorough and satisfactory means may shortly be devised which will enable a teaching hospital to be linked to a municipal hospital if and when desired.

The voluntary hospitals have welcomed the decision of the Public Health Committee to appoint salaried short-term resident house physicians and house surgeons for service in municipal hospitals, being of opinion that these appointments will provide valuable post-graduate experience. The two committees have also discussed various proposals made by the County Council for increasing accommodation at certain municipal hospitals, and for the establishment of special units such as those for thyroid cases and plastic surgery.

Projected scales of salaries and wages in municipal institutions have also been the subject of consideration. Statements regarding these matters have from time to time been issued to the Committee's constituent hospitals.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

LOANS TO UNIVERSITY STUDENTS.

The education committee of the Edinburgh town council have announced a scheme of loans to University students. These loans would cover attendances at all the courses of the University as well as at the College of Art, Veterinary College, Agriculture College, College of Domestic Science, and the Training Colleges. Edinburgh is the first burgh to adopt the scheme, which is in force in seven Scottish counties, Dunbarton being the pioneer. Applicants must be fully qualified for admission to the institution and course they are to attend. They and their parents or guardians must be resident in the city of Edinburgh at least twelve months prior to the application. They must supply to the committee a certified statement or declaration as to their income or other financial circumstances. They must sign an obligation to repay to the committee, within the time specified, all sums advanced, and this obligation must be endorsed by a responsible person or responsible persons accepted by the committee as a guarantor or guarantors for the due repayment of such sums. Before making payment of any instalment, the education committee may require evidence that the student is making reasonable progress with his studies, and in the event of their not being so satisfied, or of the student being guilty of serious misconduct, or of the student being no longer in a position to require such assistance from the committee, they reserve the right to suspend or discontinue the payments. In the event of failure to complete the course, the total amount advanced shall become repayable immediately. Unless in exceptional circumstances, and with the approval of the committee, the student must not hold any other grant, allowance, or bursary. The amount of the loan shall be in the discretion of the committee. The maximum amount of the loan and the normal periods of repayments are specified, and the sums vary from £25 to £150.

At present, the local education authorities give allowances to suitable students, and in administration no doubt difficulties will arise between the free grant and the loan; but there should be a place for both. In the early days of the Carnegie Trust relief of fees, any student could apply and receive; but later the University Carnegie Trust laid down the strict condition that where the student had not performed the work of the class he had to refund at once the amount received. This had a very wholesome effect on the work of the classes. There is talk of establishing competitive examinations both for the public bursaries or allowances and for the new grants.

Incidentally, the University of Glasgow advertised some time ago that the number of medical students to be admitted for the next winter session would be strictly limited. No doubt this comes of two facts: first, that the University is not prepared to extend its teaching staff to meet the rising demand; and, second, that care must be taken not to overcrowd the medical profession in the same way as the teaching profession in Scotland has become overcrowded.

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[1] The Committee consists of forty members with Lord Riddell as chairman and Dr. Geoffrey Evans as honorary secretary. The other medical members are: Mr. A. Lawrence Abel, Lady Barrett, Dr. Edmund Colbeck, Mr. Robert Davies-Colley, Prof. L. S. Dudgeon, Mr. Charles Gibbs, Mr. E. L. Pearce Gould, Dr. A. M. H. Gray, Dr. Philip Hamill, Sir Henry Jackson, M.P., Dr. J. M. H. MacLeod, Mr. M. S. Mayou, Mr. Robert Milne, Mr. D. Denham Pinnock, Dr. Arthur Porter, Dr. Harold Pritchard, Mr. D. W. Roy, Dr. E. Bellingham Smith, Mr. T. G. Stevens, and Dr. C. M. Wilson.

LOW SCOTTISH BIRTH-RATE.

The birth-rate for Scotland during the first quarter of this year was 19·0 per 1000 of the estimated population, being 1·1 above that for the previous quarter, but 1·0 less than the average for the corresponding quarter of the previous five years. It is the lowest birth-rate recorded in Scotland for any first quarter since 1919, and with that exception is the lowest first quarterly rate on record. The death-rate, 16·2 per 1000, is 4·0 more than in the previous quarter, but is 1·2 less than the average. The marriage-rate, 6·3, is 0·3 below that for the previous quarter, but 0·3 above the average. The infantile mortality-rate, 113 per 1000 births, is 37 above the rate for the previous quarter, but is one below the average.

THE EDINBURGH CHAIR OF PSYCHIATRY.

Dr. D. K. Henderson, physician-superintendent of the Glasgow Royal Mental Hospital, has been appointed physician-superintendent of the Royal Edinburgh Hospital for Mental Disorders, in succession to the late Prof. G. M. Robertson, and has also been appointed to the chair of psychiatry in the University of Edinburgh. Prof. Henderson graduated in medicine at Edinburgh in 1907, and had the advantage of studying under the late Sir Thomas Clouston. He worked with Prof. Adolf Meyer for six years at the Psychiatric Institute, New York, and later at the Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore. He also studied under Prof. Kraepelin and Prof. Alzheimer at Munich, and with the late Sir Frederick Mott in London. During the late war he attained the rank of major in the R.A.M.C. His present post he has occupied since 1921, and he has also been lecturer in psychiatry in the University of Glasgow. Last year he delivered the Morison lectures on social psychiatry before the Royal College of Physicians of Edinburgh.[1] His range of illustration and catholic outlook, as well as his balanced criticism, made a great impression.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

THE GERMAN SURGICAL CONGRESS.

THE congress of the German Surgical Association was held as usual in Berlin during the week after Easter, with Prof. Voelker (Halle) as president. The first official subject of discussion was the surgical aspects of the liver, introduced by Prof. Henschen (Basle). He pointed out that in hepatic disorders with jaundice it is hard to say whether a patient will be able to stand narcosis or the shock of an operation. The disorder, whether functional or organic, prevents the liver from taking its share in detoxication and elimination—a share which should be large if renal efficiency is for any reason reduced. Biliary peritonitis, it was stated, has a doubtful prognosis, the toxicity of the bile varying considerably. Patients with hepatic disorder are apt to project their pain into the region of the appendix so that it is often regarded as a sign of acute peritonitis. On the other hand, acute appendicitis associated with hepatic disorder is liable to lead to suppuration of the liver, or acute atrophy. Allergic affections of the liver simulate acute cholecystitis or cholelithiasis, yet have no anatomical basis. In those cases cholecystectomy is unsatisfactory and cholecystotomy should be performed instead, so as to relieve the liver and give it a chance to recover. Prof. Brugsch (Halle) said that the depth of jaundice is decisive for the success of an operation; if icterus is long continued, damage of the liver may be presupposed. With mechanical occlusion of the bile-duct surgical intervention must not be postponed unduly. To diminish the danger of an operation the glycogen content of the liver must be increased by a diet of carbohydrates and albumin. Transfusion of blood, and in hepatic coma of phosphate, is recommended, while the activity of the liver should be promoted with Decholin.

The second official subject was gangrene of the extremities, introduced by Prof. Ceelen (Bonn). For a patient to recover from commencing gangrene it is essential, he said, that the cells of the affected organ should be intact and should have an adequate blood-supply. Gangrene caused by embolism and gangrene due to syphilitic endarteritis are especially dangerous. The reason why gangrene is commoner in the legs than the arms is the erect posture and the longer time required for the blood to flow from the heart to the legs. Diabetic gangrene is caused by sclerosis of the media, by which the circulation of the blood is locally retarded and the elimination of toxic substances is made more difficult. Juvenile gangrene, according to Ceelen, is not due to primary thrombosis with secondary inflammation but to a condition similar to chronic septic rheumatism caused by streptococci. A special constitutional liability to rheumatism must be present if juvenile gangrene is to develop. The surgeon must ascertain very early the symptoms in order to remove the causes. Dr. Roepke (Wuppertal), discussing the various causes of gangrene, said that early diagnosis and prophylaxis was essential to avoid amputation. Periarterial sympathectomy has not been so successful as was hoped, but the discovery of circulatory hormones has provided a powerful remedy. Prof. Bier (Berlin) warned his hearers against raising a limb in which gangrene is beginning, since this procedure will make it still more bloodless. He recommended the injection of animal blood.

The third official subject concerned the natural curative power of the body in surgical diseases and was introduced by Prof. Heile (Wiesbaden). He mentioned injection and transfusion of blood, diet prescriptions, and artificial production of fever by injection of albumin. Prof. Kubanyi (Budapest) dealt especially with the transfusion of blood and said that it was essential to preserve the natural temperature of the blood by special apparatus. Prof. Bohler (Vienna) spoke on fractures of the vertebræ and described his method of raising the compressed vertebra under local anæsthesia. A film demonstrated that his patients were able to perform gymnastic exercises shortly after injury.

A NEW HORMONE.

At the meeting of the Berlin Medical Society on March 16th Prof. Hermann Zondek reported on experiments performed by him and his assistant, Dr. Bier, on patients suffering from manic-depressive insanity. They found that the blood of those patients contained less than the usual quantity of bromine, but became normal between the attacks. They claimed to have discovered in the pituitary gland a new hormone containing bromide, and to have succeeded in isolating it in a soluble form. The new hormone injected into dogs produced a decrease of motor power, fatigue, and apathy. During sleep the hormone is said to be discharged from the pituitary gland into the fluid of the medulla oblongata which is then found to contain an increased quantity of bromine. When the patient wakes this discharge ceases, and the hormone is stored in the pituitary.

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[1] See THE LANCET, 1931, ii., 80.

THE AFTER-EFFECTS OF TONSILLECTOMY.

Dr. Wirth and Dr. Lachenit, of the Heidelberg University Clinic, describe in the *Münchener medizinische Wochenschrift* the result of an investigation of the health of patients after tonsillectomy. The criticism has been made that the patient is more liable to contract infections, and to develop chronic pharyngitis and hoarseness; 200 patients were approached, of whom 92 consented to be examined and six answered questions by letter. All the patients declared themselves to be satisfied with their state of health; some complained of coryza, but these were mostly found to be suffering from some pathological condition of the nose, such as deviation of the nasal septum. In some cases scarring of the palatine arch has caused difficulty in speaking, but all the patients stated that they did not regret having undergone the operation.

ORESTHIN.

Dr. Schmidt writing to the *Centralblatt für Gynakologie* Nr. 3/1932 reports on his experiences with oresthin, an ecbolic compound of which 1 g. is equal to 1 g. of thymophysin. He has used it in 200 births and in 80 cases of induced abortion. Four injections are made of 0·5 to 1·5 g. at first and 1·0 g. when the head has entered the pelvis. In no instance has an infant died during birth. The duration of the labour is said to be considerably shortened by the drug, which is also indicated when separation of the placenta is retarded. Oresthin does not increase the blood pressure, a fact important in eclampsia.

PANEL AND CONTRACT PRACTICE

TEMPORARY RESIDENTS.

Provision is made under the National Health Insurance Acts for medical attendance on patients who may be from home when they require treatment. If away for less than twenty-four hours and the need is urgent the case can be treated locally under the distribution scheme as an emergency, the doctor being paid according to the emergency scale of fees adopted by the insurance committee of the area. An insured person who is away from home for a period of under three months can demand treatment from any local insurance practitioner by presenting to him the medical card after filling it up in space D. The doctor who accepts this card, signs it, and forwards it at once to the clerk of his local insurance committee, who returns it to the patient at his temporary address, at the same time sending the doctor who has signed it an envelope, with the name and address of the patient, his serial number, the society to which he belongs, and other particulars on it. When treatment is finished the doctor puts in it a continuation record card giving particulars of the illness, visits, consultations, and treatment. This special envelope is forwarded by the local committee to the home committee and so reaches the patient's home doctor. In this way the local committee have a record of the number of "temporary residents" attended in the quarter. Each doctor is paid for his attendance according to the local distribution scheme for this particular committee, the scale varying in different areas, but most committees allow six units for each temporary-resident patient as against one unit for the ordinary insured person. In the scheme of this arrangement, extra units were allowed for these cases because it was thought they would only receive attention when in need of it through illness, whereas the home doctor is paid his unit whether the patient is ill or not. Some committees allow eight units, others only four, for these temporary-resident cases.

CONVALESCENT HOMES.

But the matter is not quite so simple as this. Many insured persons obtain restoration to health through the assistance of convalescent homes maintained by approved societies at several well-known seaside resorts. After protracted illness the home doctor may advise a change to the seaside, and the society on application will send the patient to one of their convalescent homes, when it is usual for the home doctor to give a special intermediate convalescent certificate, if incapacity has lasted 28 days. Such a certificate covers 14 days and it can be given on any weekday between one Sunday and the next. This arrangement really covers three weeks. Thus if the special certificate has been given (say) on Monday, April 4th, no further certificate is needed until the week beginning Monday, 18th, and the patient could return home on Saturday, 25th, and obtain the necessary certificate from his home doctor on that day without infringing any regulations. He would then have been away from home 21 days, without needing the services of any insurance doctor in the area in which he was temporarily residing. Practice is, however, often different from theory. A small convalescent home will be in charge of a matron, a large home will have a medical officer who may be honorary or may be paid by the approved society. In either case it has become the nearly universal practice to collect the medical cards of these insured persons on arrival at the home. These cards are then signed in part D by the doctor to the home, who thus is credited with the appropriate number of units for each temporary resident in the home. This happens whether the convalescent requires treatment or not. Special consideration has been given in most local distribution schemes to this matter and the usual allowance is one-quarter that of the ordinary allowance—i.e., 1, 1½, or 2 units according as the usual rate of 4, 6, or 8 units for a temporary resident.

ADJUSTMENT OF THE CENTRAL POOL.

The insurance committee derives approximately 9s. a year (less 10 per cent. at the present time—a point which seems to have escaped public attention when every other cut has been noticed) for each insured person living in its area—i.e., on its register—but this does not include payment to doctors for their treatment of persons who have come to stay temporarily in its area. The money for the payment comes out of the central practitioners' pool and has to be added to the committee funds for this purpose to cover the extra units. The amount is arrived at by the Ministry of Health according to the returns furnished by each committee of the number of insured persons for whom temporary-resident treatment has been provided, and from which insurance committee's area they have come. Every insurance committee will send some of its insured persons into other areas and will itself receive insured persons from other areas. Before the central pool is divided up, a temporary-resident adjustment is made, some committees by way of addition, others of deduction. The former are chiefly the seaside and health resorts; the latter the big commercial areas. In 1930 the distribution committee decided to advise the Ministry that all ordinary temprorary-resident cases should be credited at a case value of 8s., those in a convalescent home at 2s.; previously the amount paid by a home committee to the committee of temporary residence for the treatment of its cases varied from 20s. to 3s. 6d. The amount paid was that committee's "case value" as shown by the work done for temporary residents in its own area. This was found by adding up (at 2s. 6d. per item) all items on all the temporary-resident cards sent in and dividing by the number of cards. London was found to have a case value of about 12s., and as London sends away many more temporary residents than it receives, this meant that the London insurance committee had deducted from its share of the central pool a large number of 12s. The average of case values for all committees was found to be about 8s. Hence the advice tendered to the Ministry.

ADDITIONS AND DEDUCTIONS.

The figures given by the Ministry to the distribution committee are in percentages of the total number of insured persons. The comparison of these figures becomes easier if for each addition or subtraction the figure for 10,000 persons in each committee is given. Thus London has as apportionment of index register 12·9748 per cent. and a temporary-resident deduction of 0·714 per cent. The deduction therefore for 10,000 would be 55. The comparative figures worked out on this basis for 1930 and for 1931 are as follows for a few committees:—

DEDUCTIONS.

	1930.	1931.
London	54 ..	55
Birmingham ..	33 ..	31
Newcastle ..	18 ..	41
Manchester ..	33 ..	36
East Ham ..	21 ..	22
Hull..	10 ..	18
Liverpool ..	19 ..	19
Cardiff	34 ..	34
Swansea	18 ..	28

The average deduction for England is 20·8, for Wales is 5.

ADDITIONS.

	1930.	1931.
Southport ..	440 ..	447
Blackpool ..	593 ..	501
Hastings ..	384 ..	348
Sussex. West	158 ..	147
Yarmouth ..	373 ..	419
Lincoln (Lindsay)..	138 ..	158
Cornwall ..	89 ..	94
Isle of Wight	178 ..	176

The average addition for England is 18·4, for Wales is 60.

One committee (Bucks) has changed from an addition of 1·5 last year to a deduction of 18 this year; Walsall had a deduction last year and is +0 this year. The committees which have additional credits this year as against deductions last year are: Leicestershire, Bath, Canterbury, Carlisle, Exeter, Gloucester, Plymouth, and St. Helens.

OMISSION TO DISCLOSE.

A not uncommon source of irregularity in panel practice is the patient's omission to disclose at the outset that he is an insured person. A case of this kind in South-West London resulted recently in an adverse decision by the Minister of Health against the practitioner. The patient had left the district of his former panel doctor and was now in a house in London. The respondent practitioner was professionally visiting that house in order to attend the patient's wife and another person. On Jan. 5th, 1931, the practitioner was asked to attend the patient himself who omitted to say that he was an insured person. Two days later the wife, calling at the practitioner's surgery for some medicine for herself, handed in her husband's medical card to a nurse employed in the surgery. Next day, calling again at the surgery, the wife was given by the nurse a national insurance certificate on Form Med. 40 (revised) signed by the practitioner under date of Jan. 5th, certifying that the husband was incapable of work. The husband was suffering from rectal abscess and was dressed daily at his home by a dresser employed by the practitioner. After a fortnight's confinement to his house, the husband continued to attend at the surgery to be dressed, the practitioner supplying the dressings. Certificates on Form Med. 40 (revised) continued to be signed. At the end of January or beginning of February a clerk employed by the respondent practitioner stamped the patient's medical card with the respondent's signature and forwarded it to the insurance committee. On or about Feb. 10th the respondent received the patient's medical record card from the committee. The respondent's clerk sent the patient an account for fees amounting to £6 13s. 6d. in respect of attention between Jan. 5th and Feb. 9th (both dates inclusive). The patient communicated with the insurance committee and paid
the account. Later, after the committee
communicated with the respondent, the amoun
refunded to the patient. In August the co er
We
made its formal representation to e surgeon
against the continuance of the res ase a year.
Medical List, on the ground that he weariness.
demanded and accepted fees for have proved
he was bound to give under chemotherapy"
and that he had failed to com
service. The inquiry commit ly,
proved as set forth above. CE EDMUNDS.
receipt of the patient's medic
of the certificates as from Jan
the respondent accepted the
in his list as from that date. ARFISM.
of Article 10 (1) of Part I. of T.
to the Medical Benefit Regulations, of Megalo-
dent was not allowed to make a charg il 16th,
rendering of the account and the a nter
payment were a breach of the terms of ser
inquiry committee contented itself with
mending that an order be made against the responden
for costs. The Minister thereupon ordered him to pay £5 towards the insurance committee's costs but took no step to remove his name from the Medical List.

The practitioner appealed against the insurance committee's decision to censure him and to ask the Minister to withhold £50. The tribunal found the facts established as before and recommended dismissal of the appeal. The appellant said his dresser told him that the patient desired to be treated as a private patient. The tribunal observes that Article 10 (1) would prohibit compliance with such a request. The appellant said he discussed with his clerk whether he was entitled to charge the patient, and that the clerk said the patient was not on his list till Feb. 10th when the medical card was returned by the insurance committee. The tribunal say that such a view is unfounded and that the practitioner cannot shelter himself behind his clerk's ignorance. The result is that the Minister dismisses the appeal, formally censures the practitioner, and directs £50 to be withheld; he also directs that the appellant pay £5 towards the costs of the appeal.

One point in the proceedings is unusual. Under Article 33 of the Regulations the Medical Service Subcommittee may in its report draw attention to any previous reports made in connexion with the practitioner's history. The subcommittee included in its report a mention of three criminal charges against the practitioner of having performed illegal operations. In each of the three cases he had been acquitted after trial, and he naturally protested that the subcommittee had included matters in respect of which it had itself made no inquiry or report and matters relating to charges on which he had been acquitted. The inquiry committee seems to have upheld this protest and to have declared that the complainants were not justified in referring to these matters in their representation. "The fact that such charges had been made against him was clearly calculated to prejudice the consideration of his case, and, inasmuch as he had been held by a competent tribunal to be innocent of them, the fact that they *had been made was clearly irrelevant.*" This is a very proper comment. It seems a pity, indeed, that the Minister was unable to award costs against complainants who were guilty of such manifest unfairness.

PUBLIC HEALTH SERVICES

MENTAL HOSPITAL REPORTS.

IT is impossible to review the 119th annual report of the ROYAL EDINBURGH HOSPITAL, MORNINGSIDE, without reference to the tragic loss to that hospital and to psychiatry caused by the death of Dr. G. M. Robertson only a few weeks after he read the address here printed. As usual, his report is far more concerned with the general situation of the mentally sick and the possibilities of prevention than with any dry official statistics. During 1931 the admissions to the four houses numbered 538, and 326 out-patients attended the Jordanburn Hospital and the University Psychological Clinic for Children. Of this total of 864 less than 12 per cent. were certified, and the the ole of the work was done without cost to the rate- being rs. The new children's clinic has received adopted atients since its opening in February, 1931, treated about half that number. The An insured r s proved invaluable for observation period of under The cases seen at the out-patient from any local inoyal Infirmary were classified as to him the medical uroses and neuroses, 36 per cent.; The doctor who acnt.; bodily diseases with mental forwards it at once to ervous disease, toxæmia, endo- committee, who retur systemic diseases), 15·5 per blems in juveniles, 6 per cent.; temporary address, ant.; addictions (drugs, alcohol), doctor who has sign g House and the West House name and address of nts at the end of the year, 170 the society to which lcertified, and 137 patients were on it. When treatmet nursing homes which have been it a continuation recbs and country round Edinburgh. illness, visits, co came from all over the English- special envelope ; some came from England and scape certification and one came from to the home, be placed in "the best institution in home doc Over 150 students attended the course have a truction last year; the value to the future doctor att this very extensive and representative psychotherapeutic material is very great. In concluding his report, Dr. Robertson reviews the intervention of the sheriff and urges his replacement by some responsible body such as the Board of Control or the Department of Health.

The ABERDEEN ROYAL MENTAL HOSPITAL had 860 patients on its register on the last day of last year. Of the private admissions, 39·6 per cent. were voluntary and four rate-aided voluntary patients were also admitted. The recovery-rate for the year was 40 per cent. among the voluntary patients and 24·09 per cent. among all the patients together. The death-rate was 8·9 per cent. The dental surgeon continued his visits throughout the year and saw a large number of patients. The work in the occupational therapy department continues to give gratifying results, and many patients have benefited from the diathermy, high frequency and ultra-violet ray installation. During the year a tea-room and shop for patients and their friends was opened and is giving great satisfaction. The hospital is becoming overcrowded as the numbers steadily increase, but the directors have in view a plan of expansion. During 1931 a nursing-home for 20 patients was opened. It is pleasantly situated on Dee-side and is intended for persons threatened with or suffering from early nervous or mental disorders, such as anxieties, exhaustion, or depression.

The CITY OF LONDON MENTAL HOSPITAL, STONE, DARTFORD, had 658 patients on Dec. 31st last; the accommodation proved sufficient for statutory requirements but a number of private applications had to be refused. Of the 146 patients admitted during the year, 86 were either voluntary or temporary. The recovery-rate was 58 per cent. and the death-rate 6 *per cent. The general health* was good except for an epidemic of influenza and there was no dysentery or typhoid. Every ward now has a loud-speaker, and headphones are provided for patients in bed. An out-patient clinic has been established. Parole is granted on a liberal scale; 125 *patients are allowed* outside the estate and 213 are free within the grounds. During the year, one nurse and two attendants obtained their R.M.P.A. certificates.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 23RD, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 96 (last week 87); scarlet fever, 1632; diphtheria, 772; enteric fever, 18; acute pneumonia (primary or influenzal), 994; puerperal fever, 41; puerperal pyrexia, 113; cerebro-spinal fever, 66; acute poliomyelitis, 6; encephalitis lethargica, 10; *continued* fever, 1; dysentery, 18; ophthalmia neonatorum, 101. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the *London County Council on April 26th–27th was as* follows:—Small-pox, 128 under treatment, 3 under observation (last week 122 and 1 respectively); scarlet fever, 1487; diphtheria, 1327; enteric fever, 9; measles, 2655; whooping-cough, 424; puerperal fever, 16 (plus 7 babies); encephalitis lethargica, 225; poliomyelitis, 5; "other diseases," 96. At St. Margaret's Hospital there were 13 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 109 (48) from measles, 9 (1) from scarlet fever, 40 (5) from whooping-cough, 24 (6) from diphtheria, 33 (10) from diarrhœa and enteritis under two years, and 78 (11) from influenza. The figures in parentheses are those for London itself.

The fatal cases of typhoid and paratyphoid fevers outside London occurred at Oldham and Birmingham. Liverpool reported 12 deaths from measles, West Ham 7, Sheffield 6, Leeds and Derby each 4. Manchester and Birmingham *each reported 4 deaths from whooping-cough.* Diphtheria accounted for 6 deaths at Liverpool.

The number of stillbirths notified during the week was 319 (*corresponding to a rate* of 44 per 1000 births), including 71 in London.

CORRESPONDENCE

NOMENCLATURE OF DISEASES.

To the Editor of THE LANCET.

SIR,—It is open to doubt whether certain opinions expressed in your annotation on the sixth edition of "The Nomenclature of Diseases" will be endorsed by medical zoologists, and it seems well that, at the earliest opportunity, attention should be directed to the fact that in the section headed "Animal Parasites" (Appendix C) various errata have been allowed entry or have remained uncorrected from the fifth edition.

The most unfortunate of these, perhaps, is the rendering *Wauchereria* for *Wuchereria*. That this is not a mere incidental printer's error is evidenced by the fact that the misspelling is repeated throughout. Several other misprints of a similar character occur, but need not be specified. There are, however, certain dispositions to which zoological nomenclaturists may be expected to take exception. The names *Ascaris, Dracunculus, Dioctophyme,* and *Trichuris,* for instance, have been pilloried by Prof. Leiper, while *Hepaticola* has been held by Dr. Baylis to be synonymous with *Capillaria*. Attention may also be drawn to the heading "Phylum—Vermes." This is an incorrect juxtaposition which does not find a place in the previous edition, and has apparently been introduced as an emendation. There is, of course, no zoological phylum bearing the designation "Vermes," this being merely a term conveniently applied to a conglomeration of at least four separate and distinct zoological phyla. Such discrepancies cannot fail to be an additional source of concern to those in the unenviable position of having to reconcile common medical usage with the rules of zoological nomenclature, especially as the unwary may, not unnaturally, infer that the nomenclatural doubts and difficulties which have assailed medical zoologists for at least the past three decades have been happily resolved in this official publication. Such, unfortunately, is far from being the case.

As you, Sir, have seen fit to approve and advocate the retention of this appendix in "The Nomenclature of Diseases" you may, equally, be in a position to recommend that in future editions it may be found possible to correlate the decisions of the subcommittee with current zoological opinion and practice, though, under present circumstances at least, that may appear a matter of almost insuperable difficulty. On the other hand it should be borne in mind that such conventions as may affect the nomenclature of the causal agents of disease do not necessarily, if at all, apply to the nomenclature of the resultant diseases, and that changes in the former need not inevitably be followed by changes in the latter. In this matter the committee may be congratulated on a wise conservatism in retaining such names as "filariasis" even though no species of the zoological genus *Filaria*, in its present restricted acceptance, is known to cause disease in man.

I am, Sir, yours faithfully,

London, April 30th, 1932. WILLIAM NICOLL.

THE LATE SIR WATSON CHEYNE.

To the Editor of THE LANCET.

SIR,—In your issue of April 30th Sir Harold Stiles, in writing an appreciation of Sir Watson Cheyne, refers to him as "the last of the diehards to abandon antiseptics for a strictly aseptic technique," and later on Sir Harold Stiles writes that he thinks that ultimately Sir Watson became a convert.

Sir Watson was never a diehard. It is true that he was not carried away by every breath of theory, but he did most sincerely endeavour to incorporate in his work anything that was of value in newly introduced methods, and his adherence to the older methods of technique was not due to obstinacy, but to a definite, considered judgment that it was better. It is true that he used autoclaved dressings so as to obviate the weight of the older wet dressings, but these always contained a chemical antiseptic, and in other ways his technique altered very little. Nor was he the last of that school of thought, if such an obscure person as myself may claim to be considered. He and I often discussed this question, and he always deplored the teaching that chemical antiseptics do such an infinity of harm. He quite realised the excellent results that experts, working under good conditions, could obtain by the more modern technique; but he felt that, in less skilled hands, under less perfect conditions, the results would not be so satisfactory. When I was a registrar we worked out his statistics as to sepsis over a long term of years, and we found that it was only 0·7 per cent. of the cases which showed any sign of suppuration. Most of this sepsis seemed to have arisen after the patient had been returned to the ward. We expected that about every alternate house surgeon would have a septic case—i.e., about one case a year. Controversy dies sometimes from mere weariness, not because the protagonists of a theory have proved their point. Perhaps some day "local chemotherapy" will be reinvented.

I am, Sir, yours faithfully,

ARTHUR EDMUNDS.

Queen Anne-street, W., May 1st, 1932.

CŒLIAC DISEASE AND DWARFISM.

To the Editor of THE LANCET.

SIR,—In their paper on the Treatment of Megalocytic Hyperchromic Anæmia (THE LANCET, April 16th, p. 829), Dr. Janet Vaughan and Dr. Donald Hunter refer to a case of dwarfism in a girl of 16, particulars of which were originally published in an article on Megalocytic and Non-megalocytic Anæmia, by Dr. A. C. Hampson and myself (*Guy's Hospital Reports*, 1924, lxxiv., 193). I note that they think that the dwarfism was probably due to cœliac disease, and state that it was thought at the time to be a case of renal dwarfism. May I point out that the dwarfism had only been considered renal previous to our investigation? Unfortunately, we did not carry out the urinary or fæcal examination ourselves, but, in the absence of blood or appreciable albumin in the urine, we did not think that any weight should be attached to the report of "a few blood-casts" in the urine when apparently no other casts had been found. Against the classification of this case as one of cœliac disease must be considered the facts that at no time had she had any symptoms of the condition (which would have needed to be fairly severe to produce the degree of dwarfism that existed), and that the finding of "a slight excess of fatty acid crystals in the stools" was a purely microscopical finding, the stools being apparently not abnormal. In our opinion, the case was one of Addison's anæmia occurring in a child—a condition which was probably quite sufficient to account for the dwarfism, in common with almost any severe chronic disease occurring at this period of growth. I may mention that this child was admitted to hospital solely for operative correction of her severe genu valgum.—I am, Sir, yours faithfully,

J. W. SHACKLE.

Grosvenor-street, W., April 30th, 1932.

SPEECH AND INTELLIGENCE.

To the Editor of THE LANCET.

SIR,—I have been greatly interested in Dr. Morison's paper on Speech and Intelligence in your last issue. I note that lalling and baby-talk are regarded by him as synonymous. In an inquiry last year regarding the prevalence of speech defects in the elementary school-child in Coventry, lalling and baby-talk were differentiated. Lalling was regarded as an inability to produce the anterior-linguopalatal sounds l, t, d, and n, and baby-talk as the substitution of one consonant for another. Which is the correct usage? Lalling in this narrow sense was found to be an extremely uncommon defect and had no correlation with educational retardation. On the other hand 30 per cent. of the baby-talkers were said to be educationally retarded.

I am, Sir, yours faithfully,

May 2nd, 1932. M. J. MOIR.

REFERRED PAIN IN VISCERAL DISEASE.

To the Editor of THE LANCET.

SIR,—In your issue of April 30th Mr. David Ligat points out with justice that Mackenzie extended his original conception of the viscero-sensory reflex to embrace pain and hyperalgesia of all the layers of the abdominal wall supplied by sensory somatic nerves. But Mackenzie only used the term "viscero-sensory reflex," so far as the gastro-intestinal tract is concerned, to account for pain and hyperalgesia in the abdominal wall resulting from disease of the viscera. Mr. Ligat, on the other hand, applies the term "viscero-sensory reflex" to the reflex inhibition of intestinal movement which results from trauma applied to the sensory somatic nerves of the abdominal wall, and I must again insist that this reflex has nothing in common with the mechanism conceived by Mackenzie as the viscero-sensory reflex.

That stimulation of the somatic sensory nerves of the abdominal wall does cause reflex inhibition of intestinal movement through the agency of the splanchnic efferent nerves is no mere theory, but a fact as well established as anything in experimental physiology. But it cannot be argued from this that stimulation of the visceral afferent nerves in disease must cause a radiation of pain to the somatic nerves of the abdominal wall such as Mackenzie postulated.

I must confess to some scepticism as to "the phenomenon of visible peristalsis elicited by pinching up the skin and subcutaneous tissue of the abdominal wall in certain cases of intestinal obstruction." The visible peristalsis can be elicited so much more readily in these cases by intermittent deep palpation, or better still by getting the patient to take a warm drink. But let us assume for the sake of argument that my doubts are groundless, and that this reflex is as well established as Mr. Ligat would appear to believe. It is still nothing more than a motor reflex exciting intestinal movement, presumably through the agency of the parasympathetic nerve, and has no analogy with Mackenzie's viscero-sensory reflex theory. I am, Sir, yours faithfully,

Manchester, May 2nd, 1932. JOHN MORLEY.

PSYCHOLOGY AND MEDICINE.

To the Editor of THE LANCET.

SIR,—Dr. Crookshank's letter in your last issue is confirmatory evidence, if such evidence were needed, of the truth of my contention that the fundamental science is psychology, without prefix or suffix, and that the contributions of Freud and of Adler are to be seen in their true proportions *only in relation* to this general science. Judged in this way, Freud's contribution, both of fact and of explanatory theory, towers high above the other. But when one turns from psychology to philosophical first principles one finds that such facts and subsidiary hypotheses can be interpreted philosophically in more ways than one. Methodologically, the two points of view—the psychological and the philosophical—should be kept distinct, although, of course they are intimately related to one another.

The distinctive characteristics of Adler's views which Dr. Crookshank quotes are mainly of a philosophical nature and by no means peculiar to Adler. The purposive nature of mental activity, the fundamental unity of the individual, the freedom of the will—all these are parts of the teaching of many psychologists, myself included, independently of anything that Adler ever said or wrote. Such positions can be harmonised with much of Freud's teaching, even if Freud himself and some of his followers may not accept them.

In reading the works of some "individual psychologists," one gets the disquieting impression that they are "mixing their categories," and using a vague philosophical terminology to eke out a psychol , which is weak in empirical detail. As I said in my previous letter controversial points of a truly psychological (as distinct from a philosophical) nature can only be settled on the basis of prolonged and deep analysis of cases, and those who carry out analyses are likely to find no further need to under the banner of one man, or of one movement.

I am, Sir, yours faithfully,

Harley-street, W., May 2nd, 1932. WILLIAM BROWN.

ADVERTISING AND CANVASSING.

To the Editor of THE LANCET.

SIR,—The attention of the General Medical C has been called to a proposal to provide free attendance for purchasers of a commodity which to be sold through the agency of advertisement canvassers. I am directed to point out that registered medical practitioner who associated him with such a scheme might be held to have contravene the Council's Warning Notice in regard to ad and canvassing, and to have rendered himself liabl to be summoned to appear before the Council answer to a charge which, if proved, might serious consequences. The warning referred to as *follows* :—

> *Advertising and canvassing.*—"The practices by registered medical practitioner—
>
> "(*a*) of advertising, whether directly or indirectly, fc the purpose of obtaining patients or promoting his professional advantage; or, for any such purpose, procuring or sanctioning or acquiescing in the publicat of notices commending or directing attention to th practitioner's professional skill, knowledge, services, o qualifications, or depreciating those of others; or o being associated with or employed by those who or sanction such advertising or publication; and
>
> "(*b*) of canvassing or employing any agent or canvasse for the purpose of obtaining patients; or of sancti

or of being associated with or employed by those who sanction, such employment;

are in the opinion of the Council contrary to the public interest, and discreditable to the profession of medicine, and any registered medical practitioner who resorts to any such practice renders himself liable on proof of the facts to have his name erased from the Medical Register."

I am, Sir, yours faithfully,
NORMAN C. KING,
April 27th, 1932. Registrar, General Medical Council.

"VETERANS."

To the Editor of THE LANCET.

SIR,—With reference to the annotation under this heading in your issue of April 30th (p. 947), the following practitioners whose names appear in the Medical Register, 1932, have also been registered for 65 years or longer: Dr. Edmund Holland, of Hendon, registered on May 15th, 1863; Dr. Shephard Thomas Taylor, of Edgefield, Norfolk, on Oct. 21st, 1865; and Dr. C. G. H. Bäumler, now of Freiburg, on July 25th, 1867. Dr. Edmund Holland is the senior Fellow of the Royal College of Surgeons, and also the senior Member of the Royal College of Physicians. Dr. Michael Grabham, of Madeira, the present senior Fellow of the Royal College of Physicians, qualified in 1861, although he did not register until 1883.

I am, Sir, yours faithfully,
W. J. BISHOP,
Assistant Librarian, Royal College of Physicians of London.
April, 29th, 1932.

SCARLET FEVER AND STREPTOCOCCAL INFECTION.

To the Editor of THE LANCET.

SIR,—I was much interested in Dr. Whitfield's letter in your last issue (p. 955) as I quite agree that we ought to hesitate before accepting a streptococcus as the cause of scarlet fever. There is another point I would like to raise—namely, that of the value of scarlet fever streptococcal serum in the treatment of this disease. Are the results of treatment by scarlet fever serum in any way comparable with those obtained from the use of diphtheritic serum in the treatment of diphtheria? I have been unable to satisfy myself that the incidence of complications was lessened to any great extent in serum-treated cases, as opposed to non-serum-treated ones; moreover, the period of detention in hospital for such cases was no shorter than for those which had not been given serum.

I am, Sir, yours faithfully,
J. TODESCO.
Croydon Borough Hospital, May 3rd, 1932.

TOXIC EFFECTS OF PHENOLPHTHALEIN.

To the Editor of THE LANCET.

SIR,—Dr. Elizabeth Hunt's letter, informative and interesting as it is, would be of increased value if the dosage of phenolphthalein were indicated in the cases she describes. Wise and Abrahamovitch, writing in 1922, describe several cases in the U.S.A. showing "a peculiar polychrome eruption of the skin with bullous, vesicular eroded lesions of the genitals, and mucosæ." They stated that pigmented areas may persist for years and are liable to activity again on resumption of the drug, to which, it seems, according to every account, there is no establishment of tolerance. In 1923 further cases were observed and one in particular manifested nasal herpes. In general the dermatitis produced is stated to have closely resembled that caused by phenazone in susceptible people, and these seem to be usually persons with a seborrhœic skin (Wise and Parkhouse).

I have found no mention of pruritus with phenolphthalein exanthemata by other observers save Dr. Hunt, but I have known personally of two young neurotic female patients in whom the giving thrice daily of 7½ and 10 grains respectively of phenazone has produced a marked itchiness of the skin, but with no accompanying erythema.

I am, Sir, yours faithfully,
Queen Anne-street, W., May 3rd, 1932. G. AUBREY.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. I. S. Gabe is placed on the retd. list at his own request.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. J. A. Kerr to be Surg. Lt.-Comdr.

Proby. Surg. Sub-Lts. H. R. Vickers and B. R. Alderson to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Lt. G. R. M. Apsey relinquishes his temp. commn.

Lt. C. P. Allen (temp. commn.) to be Capt.

ARMY RESERVE OF OFFICERS.

Lt. J. Neil Leitch, from Reg. Army Res. of Off., to be Lt.

TERRITORIAL ARMY.

Lt.-Col. E. M. Cowell, from R.A.M.C., to be Col.

Lt.-Col. A. Ramsbottom, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

Capts. R. N. Bhandari and A. J. C. Culhane to be Majs.

The prob. appts. of the undermentioned officers are confirmed:—To be Capt.: R. M. L. Still. To be Lts.: B. Temple-Raston (now Capt., prov.), Mazhar Hussain Shah, G. K. Graham, A. W. West, J. O'Neill, H. B. Macevoy, M. K. Bryce, M. M. Mansfield, J. Guthrie, J. L. O'Neill, and W. J. Stewart.

The undermentioned appts. are made:—To be Lts. (on prob.): G. R. M. Apsey and Hannes Hannesson.

A BIRMINGHAM HOSPITAL SHRINE.—A brick room at Dudley-road Hospital, Birmingham, has been transformed, at the cost of the staff and friends, into a shrine or chapel for the reception of patients who die in the hospital.

A DONCASTER INFIRMARY SWEEPSTAKE.—The Doncaster Infirmary Supporters (St. Leger) Association has been formed with the object of raising £50,000 by means of a sweepstake on the race for the St. Leger. The mayor of Doncaster was the first member to be enrolled, and the chairman of the committee is the honorary solicitor to the hospital. The annual subscription is 5*s.*; an office has been taken, and Miss A. E. Hanchett, the infirmary's appeals secretary, has been given six months' leave of absence to enable her to take the post of secretary of the Association. The hon. treasurer is the manager of a local bank. The proportions of the subscribed money to be allocated to the infirmary and to the members on the result of the race have not yet been determined. Membership forms are being sent to every house in the district served by the hospital and applications for membership have already been received from many parts of the country. The objects of the association appear to be wider than the organisation of a sweepstake, the rules giving powers "to take such steps by personal or written appeals, public meetings or otherwise as may from time to time be deemed expedient for the purpose of procuring contributions to the funds of the association, in the shape of donations, annual subscriptions, or otherwise" and "to subscribe to any local or other charities and to grant donations for any public purpose."

OBITUARY

SIR DAVID DRUMMOND, C.B.E., M.D.Dub., D.C.L., LL.D.

By the death of Sir David Drummond, in his eightieth year, Newcastle and the north of England has lost one of its most distinguished physicians.

SIR DAVID DRUMMOND.

[*Photograph by Lafayette.*

David Drummond, the third son of David Drummond, of Dunfillan, Rathgar, near Dublin, was born there in 1852. After completing his schooldays at Broadstairs and Rathmines, he received his early medical education at Trinity College, Dublin, and at the Meath Hospital, where he was a pupil of the great Stokes. He graduated M.B., M.Ch., at Trinity College in 1874, and, to extend his experience, proceeded to the medical schools at Vienna, Prague, and Strasbourg. In 1876 he took the higher degrees of M.A. and M.D. Dublin, and in the same year came to Newcastle and was appointed assistant physician to the Children's Hospital, where he succeeded a year later to the post of full physician. At the same time he was appointed physician to the Newcastle Dispensary, but resigned the latter post on being appointed honorary physician to the Royal Infirmary two years later.

Drummond's association with the Royal Infirmary was indeed intimate, for he served on the staff for the long period of 34 years, from May, 1878, to December, 1912, while concurrently, from July, 1879, to November, 1895, he held the post of pathologist to the institution. During the whole of that time he was an enthusiastic teacher; ever interested himself, he succeeded in stimulating others, and in keeping abreast of that rapid development of medical knowledge which took place during the period. At the University of Durham College of Medicine he was equally a great and abiding figure. He passed from one lectureship to another. In 1876 he was appointed lecturer in therapeutics, in 1878 in physiology, and in 1883 in pathology, continuing to teach that subject until he was appointed lecturer in medicine in 1905. He succeeded to the position of professor of medicine in June, 1911, and continued in that office until July, 1924, being emeritus professor at his death. He was President of the College from 1918 to 1924, and Vice-Chancellor of the University of Durham from 1920 to 1922. The abundance of academic and administrative duties which he discharged led to a keen interest in promoting good fellowship between members of the profession and in his taking practical steps for the advancement of medical education. He served for several years as secretary of the Northumberland and Durham Medical Society, and as editor of its transactions, and for a period was secretary of the north of England branch of the British Medical Association, of which he was President in 1921.

Drummond's earliest scientific bent was towards neurology, as is indicated by his writings on "Diseases of the Brain and Spinal Cord," "Paralysis from Peripheral Neuritis," "Anæsthesia in Functional and Organic Disease of the Nervous System," and other contributions of a similar nature. In later years he widened his scope, and became especially interested in specific aortitis and thoracic aneurysm, in the investigation of which he had a great and varied experience. In his presidential address before the B.M.A. in 1921 he expounded fully the text of his lifelong teaching by his plea for accuracy in clinical observation and its confirmation by the test of pathological findings, in order that clinical knowledge might be strengthened and that the statistics founded on death certification might correspond with fact. He was truly one of the great teachers of clinical medicine, and there are many men who will gladly acknowledge him as having been their master. As a consulting physician he enjoyed a deservedly extensive reputation, not only in the northern counties but throughout the country at large. A colleague writes of him thus: "His practical powers of observation enabled him to make rapid deductions, and to translate physical signs into terms of pathology, and he was at all times helpful alike to patient and practitioner. He was a most delightful colleague, always inspiring, never stale, and throughout his life a true and loyal friend. He was, moreover, a happy, genial companion, and enjoyed his leisure and his pastimes. In his younger days he was a keen cricketer, and had always been fond of country sport. Of wiry build and active temperament, even up to last autumn he could hold his own with much younger men on a long day's shooting."

Sir David Drummond was senior physician to the Northumberland War Hospital during the war, received the C.B.E. in 1920, and a knighthood in 1923. He retired from practice in 1926, in which year he was President of the Association of Physicians of Great Britain and Ireland, and was serving on the Royal Commission on Lunacy. He went to live at Beattock in Dumfriesshire, where his time was equally divided between *country pursuits*, which loved, and the study of literature, where his views were far ranging and controversial. Throughout his long successful life Lady Drummond was ever by his side. She was the daughter of a Newcastle man, Mr. George Angus, and they had six sons and four daughters. They lost one son in the war, and another son, that promising surgeon Mr. Hamilton Drummond who distinguished himself by service in the war was killed in 1925 as the result of a motor accident Lady Drummond and four sons survive him, one of whom is Dr. Horsley Drummond, a successor to his father as physician to the Newcastle Infirmary. The sympathy that goes out to Sir David's family will be accompanied by high appreciation of t usefulness of his life, of his fine professional example and of his contributions to the promotion of medi knowledge and education.

Prof. G. Grey Turner writes: "The death of Sir David Drummond removes a notable physician, who had occupied a leading place in Newcastle and the North of England for t greater part of a long life. He will always gratefully remembered by a very numerous su " of men, now scattered all over the world, who came under his influence, either as students or house physicians or young practitioners, and each will remember him for his sound teaching, genial personality, kindly influence, and timely help in one way and another. Drummond was a great clinician and clinical teacher, who constantly urged the importance of actual contact with patients. He was certainly best at the bedside or in the post-mortem room, for when the opportunity offered he was ardent to carry the lines of clinical examination into the domain of naked-eye pathology.

"When I first came under his influence as a student he acted in the dual capacity of honorary physician and pathologist in the old Royal Infirmary, and his keenness in both spheres was infectious. It certainly taught me the paramount importance of correlating the clinical findings with post-mortem examinations, and this was always uppermost in his mind and those who remember his presidential address at the annual meeting of the British Medical Association in Newcastle in 1921 will recollect that this was his theme. He was keenly interested in surgery—not as an art but as a therapeutic measure—and in those far away days he was often readier than some of his surgical colleagues to invoke its aid in doubtful cases. His long and intimate collaboration with his friend and colleague, Rutherford Morison, was very fertile and led to many notable enterprises. Their names will always be associated with the operative treatment of ascites in cirrhosis of the liver which, by-the-by, was an operation practised in Newcastle with much success until the day arrived when that particular type of disease seemed largely to disappear. It was always delightful to see Drummond at an operation on one of his own cases; no one was more enthusiastic, no one more anxious to understand the pathology. Later in my career I was accustomed to meet Sir David in consultation, and each case was an education for me. Though I always took great pains to elucidate beforehand every point that I thought might have a bearing on the condition, he was sure to pick out something I had overlooked, to which he always drew my attention in the kindest possible way, and only to my advantage. I shall ever be extremely grateful for his encouragement and often in the time of darkest failure. How much that meant to a young surgeon!

"On one occasion he gave a delightful address to the Students' Medical Society entitled The Detective in Medicine, and that certainly was a rôle in which he excelled. His own interest never seemed to flag and I well remember, when he was nearly 70, how he urged me to 'keep up your interest in medicine,' and for him that word was always used in its widest sense. His example of youthful enthusiasm carried on into old age was in itself a perpetual stimulus, which none could witness without being infected.

"An enormous consulting practice, together with his hospital work, and his duties in connexion with the medical school, often involved him in overwork and many anxieties, but he always had the saving grace of humour, and this often came to his aid and cheered up those about him even in grim circumstances. He was never tired of relating stories of his early medical life in Dublin, and it was then that the delightful Irish brogue, at other times imperceptible, became so apparent. It was only a few days ago that he made me join him in laughter concerning the adventures of himself and his old friend Watson Cheyne in a sailing expedition down the Rhine, when they were students together in Strasbourg, and now alas both are gone!

"In dealing with patients he was habitually courteous and kindly, but on occasion he could be—to say the least of it—unmistakably emphatic, and by observing his methods of handling difficult situations, young practitioners gained a great insight into the conduct of their work. All through the war, and in the excessively busy years immediately afterwards, his energy and capacity for labour were a constant example. It was quite remarkable how he would go off in the early morning to make a country consultation, and would carry on far into the night, apparently without fatigue. As a matter of fact it was only his spirit which carried him along for, though wiry, he was not really robust, and his temperament was of the nervous type. In spite of this he had fine courage, as was shown by the way he braced himself to face the ordeal of a much dreaded operation."

EVAN HERRING HARE, F.R.C.S. Eng.

Dr. Hare, of Hornsey, who died on April 25th, was born at Putney in 1851, and was educated at Guildford, Westminster, and St. John's College, Oxford, where he graduated as B.A. in 1872 and later as M.A. From the University he proceeded to St. Thomas's Hospital, and qualified as M.R.C.S. in 1876. In the same year he saw active practice in the war between Serbia and Turkey, as one of the surgeons sent out by Sir E. Letchmere's committee, and he obtained a considerable reputation by bravely completing a surgical operation when an attack by Bashi-Bazouks was momentarily anticipated. This incident, in which Mr. Fleming Sandwith was his companion, was described in our columns at the time (1876, ii., 624) and won him the Gold Medal for Valour from King Milan of Serbia. He also went to South Africa, as civil surgeon attached to the Army, in the Zulu War of 1879, but was prevented from rendering assistance to the troops by a severe fever which kept him in Natal until, on convalescence, he was invalided home. After a few years' practice at Kew he moved to Hornsey in 1886, and there passed the rest of his life, in active practice until 1920. In 1887 he became F.R.C.S. Eng., and in 1891 he produced an English translation of Dr. Theodor Puschmann's voluminous work, "Die Geschichte des medicinischen Unterrichts" (History of Medical Education). Unfortunately, after only a few copies had been issued, the whole of the rest of the edition was destroyed by a fire at the publisher's warehouse.

Dr. Hare married in 1885 Emily Lucy, daughter of R. N. Cummins. Four of their six children survive him, but his eldest and youngest sons were killed in the late war.

Sheffield Royal Hospital.—The South Yorkshire miners' welfare committee has promised to give £20,000 and, if necessary, £25,000 for the provision of a new X ray and massage department at Sheffield Royal Hospital. It is officially stated that the present department is not safe for those continually working in it.

Institute of Hospital Almoners.—The annual report records that during the last two years the number of women applying for training has much increased. The present economic situation has, however, checked the normal development of the work, and during the last few months not so many new almoners' departments have been established. In a preface to the report Lord Moynihan, president of the institute, expresses the hope that hospital boards will-not defer the establishment of an almoners' department on grounds of economy. "The prevention of waste," he adds, "is a part of the economy, and that, given a wide interpretation, is the business of the almoner."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

DUTIES ON MEDICAL AND SURGICAL INSTRUMENTS.

THE House of Commons, on Wednesday, April 27th, considered the Budget resolutions on Report.

Mr. LAWSON moved an amendment to exempt from the duties chargeable under the Import Duties Act, 1932, any consignment of medical, surgical, or scientific instruments. He gathered from the Board of Trade Navigation Account that the total amount of medical, surgical, and scientific instruments imported into this country from abroad last year amounted in value to £337,000. The medical profession in this country were dependent for those instruments to that amount upon foreign countries. Any imposition of taxation upon the instruments imported from abroad would certainly increase the expenditure and the difficulties of the hospitals and of all who carried on work of that nature. There was another point. They knew that in scientific matters, and particularly in the higher branches of science, the more delicate the instruments were the less likely they were to be affected by boundaries. He believed that instruments of this kind were supposed to be more affected by an international outlook because of the great human needs for which they were designed, and therefore it was probable that doctors who needed operating and other scientific instruments would be solely dependent upon instruments which came from abroad.

The SPEAKER said that it seemed to him that a great many of these medical and surgical and scientific instruments were already liable to duty, and if that was the case those that were liable to duty would be exempted from the provisions of the Import Duties Act.

Mr. HORE-BELISHA said that the argument which had been developed by Mr. Lawson was one which appealed to the sympathy of the House and of the Government. If he had in mind any particular class of instruments in favour of whose exemption a powerful case could be made, that case could be presented to the Advisory Committee, who, under the existing law, would have power to recommend its insertion in the Free List.

Mr. H. WILLIAMS said that Section 1 (5) of the Safeguarding of Industries Act read as follows:—

> "For the purpose of preventing disputes arising as to whether any goods are or are not any goods chargeable with duty under this part of this Act, the Board may from time to time issue lists defining the articles which are to be taken as falling under any of the general descriptions set out in the said Schedule . . ."

Accordingly, if a new scientific instrument was nvented, all that the Board of Trade had to do was to add it to the list.

The amendment was negatived.

Mr. TINKER moved an amendment providing that if an article could not be sold at a reasonable price when produced in this country a duty should not be placed upon it when it came from abroad.

Mr. HORE-BELISHA replied that the Advisory Committee would have regard to reasonable price and would act as a safeguard to the consumer, and the amendment was negatived by 264 votes to 48.

HEALTH ADMINISTRATION IN INDIA.

On Friday, April 29th, the House of Commons went into Committee of Supply on the Civil Estimates. Captain BOURNE, Deputy-Chairman of Committees, was in the chair.

On a vote of £81,110 for the cost of the Department of His Majesty's Secretary for State for India in Council,

Sir SAMUEL HOARE (Secretary of State for India) said that he had always thought that perhaps the two greatest gifts that the West could give to the East were improvements in communications and improvements in health. He could report certain definit improvements in the province of health. Firs there was the advance that was being made in mastering the terrible scourge of leprosy. Leprosy surveys were being continued, and had already led to a great increase in the number of cases treated at small in clinics. These cases numbered over 24,000 the Central Provinces and 28,272 in Madras, a decade ago only about 8000 lepers were being for in the whole of India. A very interesting had also been made in the measures for dealing with another sourge of India—cholera. There was what was called a bacteriophage, which had been discovered It was a very minute parasite growing in the chol bacillus, and it could now be isolated for a pure culture. The varieties obtained had th power to destroy the bacilli of cholera very rapidly and they were added to the water-supply cholera had broken out or was likely to break out That had been done in the last 12 months in th Nawgong district of Assam. In this cholera season *and the last two cholera seasons, practically* cholera occurred in the area dealt with. If was confirmed by further observations, it constitute the most important advance which ever been attained in dealing with the most epidemic disease of India. A quite definite adva had also been made during the last 12 months wit the malaria survey for coping with another of th great scourges of the East.

After further debate, progress was reported.

PRISON ADMINISTRATION.

On a Vote of £394,110 for the salaries and of the Prison Commissioners and the Prisons England and Wales,

JUVENILE DELINQUENTS.

Dr. SALTER urged that juvenile delinquents should remanded to an observation centre where their re mental and physical condition could be ascertain instead of being sent to prison. The necessity, said, was now urgent, particularly having regard t the increasing number of juvenile delinquents to the very numerous cases, which were unfortunatel increasing in proportion to the whole, where ment and moral and physical damage had been caused *encephalitis lethargica*. He knew of two adolescen who were suffering from this disease and were sent t prison, whereas if they had been remanded to observation centre their condition would undoubtedl have been discovered. One of them actually died prison from the after-effects of the disease, obviously it was cruelly wrong that they should have been sent to prison. The other had paralysis the muscles of the eyeball and various other physi signs which would have led to instant detection altogether different treatment had the recommended by the Departmental Committee carried out. He could also give the Home Secreta particulars of the case of a young man who suffering from juvenile general paralysis of insane. He was in prison some months before it wa discovered what was the nature of the complain from which he was suffering, and he was removed an asylum. We were behind a great many othe countries in this respect. Belgium had admira observation schools for the purpose, and a caref graded system enabled the specialists who contr the institutions to decide what particular afte treatment was required. All kinds of inge physical and psychological tests were employed, an as a result the whole attitude of the authorit towards juvenile offenders had been modified. At t London County Council last week there was a longed debate on this subject, and he understood that general dissatisfaction was expressed by speaker representing all parties at the condition of things It was agreed on all sides that development in th direction he had indicated should be carried out. It was held, however, that it was not a matter for the County Council, but for the Home Secretary to decide the precise form under which the administration should be conducted. He hoped that Sir H. Samuel would give his personal attention to the matter.

PRISON DIETARY.

Referring to the question of prison dietary, Dr. Salter said that he supposed that the most important medical discovery of this generation had been that of vitamins. It was a discovery of equal importance to the discovery of antiseptics by Lister. It was known now how our mental faculties, our physical health, and our moral outlook could be modified, not merely by internal gland secretions, but by these vitamin substances that were taken in food. The supply of green stuff, green vegetables, particularly uncooked green vegetables, in prison was extraordinarily small and deficient. He spoke with some experience of this matter because he had been in prison on more than one occasion. It might be said that these were luxuries to which no prisoner was entitled. He submitted, however, that in view of modern knowledge as to the detrimental results of the deprivation of these vitamins they ought to be supplied to every prisoner. He asked the Home Secretary to consult his medical advisers on this matter in the hope that prison dietary would be augmented or modified in this direction.

TEST BY PSYCHOLOGISTS.

Mr. Lovat-Fraser said that it was now the opinion that children who got into trouble ought to be carefully examined; that their characters ought to be tested by psychologists. Their past life and their environments should be investigated, and that only then should the magistrates deal with them. The same thing was necessary with adult prisoners. At present we treated abnormal people as if they were normal, and punished them for their abnormality. We forgot that many of the inmates of prisons were mental cases, and that they were suffering from a mental disability which required sympathetic treatment and consideration. Was it right, for instance, to send to prison a neurasthenic whose case called for careful treatment and a cheerful and inspiring environment? The governors of our prisons ought to be medical and psychological experts, able to differentiate between different types of prisoners. The delinquent ought to be placed under a medical expert and only when all the circumstances of his case had been ascertained should a decision be come to as to his fate.

Mr. W. Hutchison said that he recently visited Maidstone Gaol, and asked the medical attendant some questions about the prisoners' diet. The medical attendant informed him that it was a scientific diet and that it had been discovered that prisoners for a short time after entering prison lost weight. Then they came to a point at which their weight went up, and they became much more healthy in the majority of cases than they had ever been before they came into prison.

Home Secretary's Reply.

Sir H. Samuel, replying to the debate, said that Dr. Salter had spoken of the necessity for observation homes, particularly for children and in London, and for special attention being given to the individual characteristics of the children and other delinquents so that medical or other measures might be adopted suitable to individual cases. That was, undoubtedly, of great importance, and Dr. Salter was entirely right in the view he had expressed. The present remand home in London was not satisfactory, but that was a matter requiring legislation. It concerned the County Council also, and if Dr. Salter could persuade the Council to take a forward view in the matter, no one would be more pleased than the Home Office or more ready to assist their efforts. The prison dietary had been framed after very careful medical investigation, and as a rule the prisoners put on weight considerably after they entered the gaols nowadays, but he would draw the attention of his expert advisers to the point raised by Dr. Salter, himself a medical man, with regard to the inclusion of fresh vegetables.

The debate was adjourned.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 27TH.

Control of Locusts.

Captain Peter Macdonald asked the Secretary for the Colonies to what extent, as a result of the recent recognition of the Imperial Institute of Entomology in London as the international centre for the collection of data on the movements of locust swarms, it had been found possible to expedite work in this connexion; and how many foreign governments were coöperating in the work at the present time.—Sir P. Cunliffe-Lister replied: The foreign Governments so far coöperating in the investigation into the breeding of locusts are those of France and Italy, covering their respective dependencies. The progress made already includes Anglo-French coöperation in an investigation of the breeding-grounds of the migratory locust in West Africa. His Majesty's Government have just received from the Committee on Locust Control of the Economic Advisory Council its fourth report, which deals with this question and is now under consideration. The programme of future work in coöperation is to be discussed at a further international meeting in Paris next July, and this will afford a convenient opportunity of considering any recommendations made in the report.

Silicosis.

Mr. Tinker asked the Home Secretary the number of workpeople in the coal-mining industry suffering from silicosis during the latest 12 months for which figures were available and the number who received compensation for this disease, giving separate figures for Lancashire.—Sir Herbert Samuel replied: Silicosis is not notifiable and the only figures I can give are those of cases under the Workmen's Compensation Act. The Returns under that Act show that in 1930—which is the last year for which figures are at present available—there were 20 cases in which coalminers recovered compensation for disablement from silicosis. Information as to the distribution of these cases is not complete, but so far as known, only one of them occurred in Lancashire. I may add that I am informed that the Medical Board, which was set up in June last, has not so far issued any certificate in respect of any coalminer in Lancashire.

Dangerous Drugs.

Mr. David Grenfell asked the Home Secretary what was the production in Britain during the 12 months ended Dec. 31st, 1931, of cocaine, codeine, dionin, heroin, morphine, and peronin; whether the production was in excess of the requirements for medical and scientific purposes; and whether the convention for the limitation of the manufacture of narcotic drugs was operative in Great Britain.—Sir Herbert Samuel replied: The answers to the second and third parts of the question are in the negative. The following statement deals with the first part of the question:

	oz.
Cocaine alkaloid and salts	14,903·036
Codeine	12,325·74
Dionin	2.013·06
Heroin (diacetylmorphine)	3,326·4
Morphine alkaloid and salts	46.520·74
Peronin	nil.

Offences against Young Persons.

Viscountess Astor asked the Home Secretary if, having regard to the increase in indecent assaults on young persons, especially on children under 12 years of age, the number of cases in which defendants are acquitted because the unsworn evidence of the child cannot be accepted without corroboration, and the difficulties of obtaining corroboration since these offences are usually committed when the child is alone, he will consider taking steps to give effect to the recommendations of the Committee on Sexual Offences against Young Persons that, whenever it is justifiable, the evidence of a child who appears able to tell a connected story will be taken on oath and that those conducting prosecutions should bear in mind that the absence of corroboration in the case of a child whose evidence has been given on oath is not a bar to a conviction.—Sir H. Samuel replied: It is obviously desirable that, wherever justifiable, the evidence of a child who can tell a connected story should be taken on oath and I am advised that in view of the judgment of the

Court of Criminal Appeal in R. v. Crocker (17 C.A.R. 4546) the absence of corroboration is not a bar in law to a conviction except where corroboration is required by Statute. The recommendations of the Committee on these points, which are really suggestions as to the presentation and reception of evidence were with other recommendations of the Committee commended to the careful consideration of all concerned in the circular which was issued from the Home Office on Sept. 17th, 1926. The recommendations in question were for the courts and others to consider rather than for the Home Secretary to give effect to; but no doubt the publicity given to the matter by this question and answer will attract the attention again of those concerned.

Mentally Defective Children.

Mr. RHYS DAVIES asked the President of the Board of Education whether the proportion of mentally deficient children to ordinary school-children was on the increase or decline in England and Wales.—Sir DONALD MACLEAN replied: During the last few years for which returns are available there has been practically no variation in the proportion of children in public elementary schools formally ascertained by school medical officers as mentally defective, but I am afraid that these figures cannot be used as a reliable guide to the actual incidence of this form of defect, owing to the absence of a strict uniformity of standard, and to other difficulties. The hon. Member will find a full discussion of the matter in paras. 86–90 of the report of the Joint Committee of the Board of Education and the Board of Control on the subject of Mental Deficiency, which was published in 1929.

Dangerous Drugs Convention.

Lieut.-Colonel FREMANTLE asked the Home Secretary whether British ratification of the 1931 convention for the limitation of the manufacture of narcotic drugs had yet been decided upon; and, if not, when a decision regarding ratification was likely to be made.—Sir HERBERT SAMUEL replied: It is the intention of His Majesty's Government to ratify this convention and, to enable this to be done, the Dangerous Drugs Act, 1932, was passed with the object of bringing our law into conformity with the provisions of the convention.

Lieut.-Colonel FREMANTLE: As this has already passed the other House how long will it be before there is ratification. Will it be before the summer?

Sir H. SAMUEL: I cannot give a precise date. We are in communication with the Dominions and Colonies on the subject.

MONDAY, MAY 2ND.

Opium Manufacture in India.

Mr. DAVID GRENFELL asked the Secretary for India if he could give figures showing the quantity and value of the opium manufactured in 1930–31 at the Government of India's opium factory; what part of this output was intended for consumption in India; and the total revenue of the Government of India from the sale of opium for consumption in India.—Sir S. HOARE replied: During the year ending Sept. 30th, 1930 (the latest date for which figures are available) 1,276,016 lb. of opium were manufactured, valued at Rs. 115,45 lakhs. Of this 705,067 lb., valued at Rs. 64·81 lakhs, were intended for consumption in India. The actual consumption was, however, much less. The Government of India sell opium for consumption in India to local governments at cost price. The excise revenue of local governments and administrations for the year ending March 31st, 1931, from opium was Rs. 318,72 lakhs, from which must be deducted charges, including the cost of the opium.

Mr. RHYS DAVIES asked the Secretary for India whether any steps were being taken by the Government of India to reduce the sale of opium manufactured at the Government of India's factory at Ghazipur for consumption in India, and what progress had been made in limiting the number of shops in India from which this opium could be purchased.—Sir S. HOARE replied: The distribution and sale of opium in the Provinces of British India is under the control of ministers responsible to their respective councils. The amount of opium manufactured at Ghazipur for consumption in India depends upon the demand from the Provinces. There has been a substantial and progressive reduction in recent years.

Question to Pensioners.

Mr. LOGAN asked the Minister of Pensions if he would authorise the deletion of Question 11 from Form M.P.I.F. 27; the present reasons for asking a man if he was in receipt of pension other than the disability pension and for particulars of all such pensions.

Mr. PRICE asked the Minister if he would delete Questions 12 to 18 inclusive from Form M.P.I.F. 27 in all cases where the pensioner was not in receipt of family allowances; whether his attention had been drawn to the objections pensioners had to the questions on the form; and if he would consult with the British Legion or some organisation representing pensioners, with a view to modifying the questions.—Major TRYON replied: The object of the form referred to is to secure the identification of pensioners. Inquiry for this purpose, which is made of a percentage of pensioners annually, was instituted to meet the express requirements of the Public Accounts Committee of this House to protect the Exchequer against personation. The answers to Questions 11 to 18 inclusive, in common with the answers to other questions on the form, serve a necessary purpose in this connexion, and I regret that I cannot agree to their omission.

Birth Control.

Mr. POTTER asked the Minister of Health if he would arrange for an early visit of inspection to the clinics for contraceptive advice in Withington and Crumpsall hospitals; and if he would make the report, when issued, available to Members of the House at an early date.—Mr. ERNEST BROWN replied: My right hon. friend will obtain a report on this work from the local authority and will then consider whether an inspection is desirable. He could not undertake to adopt the suggestion in the second part of the question.

Coroners' Juries.

Mr. EDWARD WILLIAMS asked the Home Secretary whether he would introduce legislation to provide that coroners' juries should in future be drawn from persons possessing such practical or theoretical knowledge as would enable them to weigh evidence properly before arriving at verdicts, and to provide for the preparation of lists of such qualified persons.—Mr. O. STANLEY (Under Secretary for Home Affairs) replied: No Sir. Legislation in the sense suggested would be incompatible with the jury system.

Animals and Poison Gas Experiments.

Lieut.-Colonel APPLIN asked the Financial Secretary to the War Office the number of horses and dogs, respectively, which had been the subject of poison gas experiments in Great Britain during 1930 and during 1931 at Porton, Cambridge, or elsewhere.—Mr. DUFF COOPER replied: Eight horses were used for experimental purposes at the Chemical Defence Experimental Station, Porton, in 1930. Apart from this, no horses or dogs have been used for experiments in connexion with chemical defence, either at Porton or Cambridge, during the two years in question.

TUESDAY, MAY 3RD.

Charter of the Radium Trust.

Sir ERNEST GRAHAM-LITTLE asked the Lord President of the Council whether any modification had been made of the terms of the charter of incorporation of the Radium Commission, by which it was required that one-half of the original members of the commission, to be selected by lot, should go out of office after a certain date and the remaining original members at a later date.—Mr. BALDWIN replied: The requirement in the charter of the National Radium Trust to which the hon. Member refers was varied by a supplemental charter granted to that body on July 23rd, 1931. I am sending the hon. Member a copy.

Birth Control Advice.

Mr. POTTER asked the Minister of Health whether clinics for contraceptive advice form an integral part of the maternity hospitals to which he distributed grants in aid.—Mr. ERNEST BROWN replied: No, Sir. Grants from the Exchequer are no longer paid direct to maternity hospitals, except for the training of midwives.

WOMEN'S NATIONAL HEALTH ASSOCIATION.—Our Dublin correspondent writes: "The Women's National Health Association held its annual meeting in the Royal College of Surgeons, Dublin, on April 28th, under the presidency of the Marchioness of Aberdeen and Temair. It is quite 25 years since Lady Aberdeen founded the Association. Its objects were, as she reminded the meeting, to arouse public interest in questions of health, to spread the knowledge of methods of preventing disease, and to promote the up-bringing of a healthy race. During the whole period of 25 years the Association has striven toward these ends, and the founder has a right to be proud of its achievements. Reports were read of the various activities of the Association—the Children's Fresh Air Fund, the Irish Goat Society, the Peamount Sanatorium, the Babies' Club, the Peamount After-Care Committee. Mr. H. E. F. Hall, superintendent of the Peamount Industrial Settlement, gave an interesting account of the progress of its work."

MEDICAL NEWS

University of Oxford.

The Romanes Lecture for 1932 will be delivered by Lord Moynihan, at 12 noon on Wednesday, June 1st, in the Sheldonian Theatre. Subject: The Advance of Medicine.

The examination for the degree of *Bachelor of Medicine* commences on June 15th and names of candidates must be received before May 31st. The examination for the degree of *Master of Surgery* commences on June 23rd and names must be received before June 4th.

University of Cambridge.

On April 30th the following degrees were conferred:—

M.Chir.—Hermon Taylor.

M.B. & B.Chir.—John Morris, Alan Eckford, A. G. J. Harris, and R. W. Malim.

M.B.—J. M. Matthew.

B.Chir.—R. M. Dowdeswell (by proxy), J. W. S. H. Lindahl, J. S. Barker, and A. H. Lankester.

Royal College of Physicians of London.

At a quarterly meeting held on April 28th, with Lord Dawson, the President, in the chair, the following members were elected to the Fellowship:—

Overseas.—Alexander Gordon Biggam, M.D. Edin. (Cairo); William Boyd, M.D. Edin. (Winnipeg); Roy Samuel Dobbin, M.D. Dublin (Cairo); Goldwin William Howland, M.B. Toronto (Toronto); Abd-el-Aziz Ismail (Cairo); Thomas William James Johnson, M.D. New Zeal. (New Zealand); Frederick Donald Herbert Blois Lawton, O.B.E., M.B. Melb. (Melbourne); Harold Douglas Singer, M.D. Lond. (Chicago); Hugh Stott, M.D. Lond. (Lucknow); and George Charles Willcocks, M.B. Sydney (Sydney).

Scotland, Wales, and Provinces.—George Allison Allan, M.D. Glasg. (Glasgow); John Alexander Murray Bligh, M.D. Liverp. (Liverpool); William Tregonwell Collier, M.C., M.D. Oxf. (Oxford); George Secretan Haynes, M.D. Camb. (Cambridge); Cyril Gray Imrie, M.D. Ontario (Sheffield); George Johnson Langley, M.D. Lond. (Manchester); William McAdam, M.D. Glasg. (Leeds); Percival Brooke Mumford, M.D. Manch. (Manchester); Alfred Parkin, M.D. Durh. (Newcastle-on-Tyne); and James Maclure Smellie, M.D. Edin. (Birmingham).

London.—Edward Arnold Carmichael, M.B. Edin.; Edward Holliott Creed, M.D. Oxf.; Daniel Thomas Davies, M.D. Wales; Stanley Dodd, M.B. Camb.; Geoffrey Hadfield, M.D. Lond., Charles Felix Harris, M.D. Lond.; Godfrey Taunton Hebert, M.D. Oxf.; Richard Anderson Hickling, M.D. Camb.; Robert Daniel Lawrence, M.D. Aberd.; Douglas McAlpine, M.D. Glasg.; Sir Frederick Norton Kay Menzies, M.D. Edin.; Charles Edward Newman, M.D. Camb.; Charles Cyril Okell, M.B. Camb.; William Gifford Wyllie, M.D. Edin.; and Frederick Hugh Young, M.D. Camb.

The following candidates were admitted members of the College:—

John Fleming Brock, M.B. Oxf., L.R.C.P.; William Donald Wykeham Brooks, M.B. Oxf., L.R.C.P.; Walter Ford Connell, M.D. Q.U. Ont.; David McKee Dickson, M.B. New Zeal.; Reginald Ellis, M.D. Manch.; Thomas Miles Gilbert, M.B. Melb.; Ronald Thomson Grant, M.D. Glasg.; Michael Kremer, M.B. Lond., L.R.C.P.; Reginald William Luxton, M.B. Manch.; William Henry McMenemey, M.B. Oxf., L.R.C.P.; Harold Eric Martin, M.D. Manch.; Roy Lee Midgley, M.D. Lond., L.R.C.P.; Vincent Philip Norman, M.D. Durh.; John Noel O'Reilly, M.B. Oxf., L.R.C.P.; Lucy Parker, M.D. Lond., L.R.C.P.; Roy Kemball Price, M.B. Lond., L.R.C.P.; Ahmed Fahmy Ragab, M.B. Cairo; Robert Dickson Roach, M.D. McGill; Terence Stanley Rodgers, M.B. Lond., L.R.C.P.; Thomas Newton Rudd, M.B. Lond., L.R.C.P.; Hassan Shukry, M.B. Cairo; Mohan Singh, M.B. Punjab; Agneswara Aiyer Sreenivasan, L.R.C.P.; George Macdonald Thomson, M.B. Sydney; Emrys Williams, M.D. Lond., L.R.C.P.; and Francis Seaton Winton, L.R.C.P.

The thanks of the College were given to Dr. Raymond Crawfurd for his services as Visitor to the Medical Faculty of the Egyptian University and for his report.

The following were appointed as College representatives: Dr. F. G. Chandler, at the forthcoming Centenary Celebrations of the British Medical Association; Dr. J. W. Carr, on the Professional Classes Aid Council; Dr. A. S. MacNalty, at the Eighteenth Annual Conference of the National Association for the Prevention of Tuberculosis; and Lieut.-Colonel F. E. Fremantle, at the Forty-third Congress and Exhibition of the Royal Sanitary Institute.

Licences to practise were conferred upon 137 candidates (113 men and 14 women) who have passed the final examination of the Conjoint Board and have complied with the by-laws of the College.

The following are the names and medical schools of the successful candidates:—

A. L. Abeyewardene, L.M.S. Ceylon, Univ. College; H. Agar, M.B. Leeds; S. D. Ahuja, M.B. Punjab, Charing Cross; S. T. Anning, Camb. and Leeds; C. G. Baker, L.D.S., Guy's; W. C. Barber, Camb. and Manchester; Sarah N. S. Barker, M.B. Leeds; C. G. Barnes, St. Mary's; G. P. Barua, M.B. Calcutta, London; A. S. Baxi, M.B. Punjab, London; F. H. E. Beckett, Guy's; Mavis W. M. Beddall, Univ. College; J. G. Billington, Camb. and St. Thomas's; M. Blashka, Charing Cross; Jane Bonnell, Wales and King's College; H. W. L. Broadbent, Camb. and St. Mary's; M. J. Brookes, London; G. H. Brookman, St. Bart.'s; J. D. Burrows, St. Thomas's; Lilian M. Buxton, Birmingham; T. A. R. Callender, London; J. Cann, Camb. and St. Thomas's; D. B. Cater, Camb. and Charing Cross; I. A. Cathie, Guy's; J. R. Chambers, Camb. and Middlesex; G. H. Cooray, Ceylon and Univ. College; F. N. Corfe, L.D.S. Guy's; D. R. Crabb, St. Bart.'s; G. W. Crimmin, Camb. and St. Thomas's; Elizabeth Curphey, Westminster; R. P. Dalal, M.B. Bomb., Bombay; P. H. Daly, St. Mary's; A. M. Davies, Bristol; D. T. Davies, Birmingham; T. G. Davies, Birmingham; E. A. Devenish, Univ. College; D. C. De Wet, St. Thomas's; L. Dexter, St. Bart.'s; G. E. Dunkerley, Univ. College; H. Edwards, Cardiff and Guy's; R. T. Elven, Guy's; Q. F. Evans, St. Thomas's; W. B. Evans, Camb. and St. Bart.'s; W. G. Evans, Camb. and St. Mary's; A. L. Eyre-Brook, Bristol; K. Fawssett, St. Thomas's; H. F. M. Finzel, Bristol; J. H. Fisher, Camb. and London; J. F. P. Forster, Birmingham; A. E. Francis, St. Bart.'s; L. Freeman, St. Bart.'s; T. A. Gavin, Guy's; G. H. Gibbens, St. Thomas's; R. G. Gilbert, St. Bart.'s; K. J. Gilchrist, Guy's; A. F. Goode, Birmingham; A. J. Grace, Oxford and Guy's; D. C. Green, St. Thomas's; L. Greenfield, London; Catherine E. I. Greenshields, M.B. Liverp.; J. N. Groves, Camb. and St. Bart.'s; C. S. Hall-Smith, Camb. and St. Bart.'s; O. C. Hamilton-Jones, Liverpool; C. F. Hamilton-Turner, Oxford and St. George's; G. R. Hargreaves, Univ. College; Helen A. Hatrick, Univ. College; F. R. Hayward, Guy's; W. N. Hine, Middlesex; R. A. P. Hogbin, Guy's; A. Hollinrake, St. Bart.'s; M. D. C. Hosford, St. Bart.'s; B. Hynes, Middlesex; D. H. Irish, Guy's; J. M. Jackson, St. Bart.'s; W. B. Johnston, St. Mary's; T. B. Jones, Camb. and St. Thomas's; T. B. Jones, Westminster; B. L. Kapur, M.B. Punjab, London; R. Kempthorne, Oxford and Univ. College; A. L. Kenyon, Manchester; L. Kessel, Guy's; Florence E. Kingsley, Westminster; R. Knox, Oxford and St. Bart.'s; W. Kravchick, St. Bart.'s; A. W. D. Leishman, Oxford and St. Bart.'s; A. A. Lewis, Guy's; J. R. B. McBride, St. Bart.'s; M. N. Mahmood, M.B. Punjab, Middlesex; Halle Marsten, Charing Cross; J. R. M. Martin, St. Bart.'s; A. R. R. Mears, Camb. and St. Bart.'s; G. J. Meikle, Camb. and Middlesex; J. Metcalf, Camb. and London; J. A. W. Miller, Guy's; T. D. F. Money, Camb. and St. Thomas's; B. C. Murless, Camb. and St. Bart.'s; W. Mushin, London; Alice M. Naish, Camb. and Royal Free; D. R. Narang, M.B. Punjab, London; R. W. Nevin, Camb. and St. Thomas's; E. Palmer, Camb. and King's College; G. B. Palmer, L.D.S. Guy's; A. Papert, Witwatersrand and St. Bart.'s; J. Parkes, Camb. and St. Thomas's; R. Parkinson, London; C. S. Patel, M.B. Bomb.; O. R. L. L. Plunkett, St. George's; C. B. R. Pollock, Guy's; V. T. Powell, Cardiff; F. Radcliffe, Camb. and St. Bart.'s; K. S. Ranganathan, Madras and St. Bart.'s; H. M. Rashid, Birmingham; J. C. Read, L.D.S. Guy's; L. Redhouse, Witwatersrand and Middlesex; R. G. Reid, Guy's; J. P. Reidy, London; L. O. Roberts, St. Bart.'s; J. Rosenberg, Guy's; E. B. Rotherham, London; A. C. Rumsey, Camb. and London; Frances N. Salisbury, Bristol; O. E. L. Sampson, Bristol; R. S. Sandhu, M.B. Punjab; S. B. H. Saunders, Camb. and St. Bart.'s; O. A. Savage, St. Bart.'s; G. C. Sawyer, Guy's; M. H. P. Sayers, St. Thomas's; E. F. Scowen, St. Bart.'s; B. Shanovitch, London; S. M. Silverstone, Camb. and Guy's; H. M. Singer, King's College; S. F. Smith, St. Thomas's; J. R. Strong, St. Bart.'s; S. C. Suggit, Univ. College; S. K. K. Sze, Camb. and St. Thomas's; W. S. Tegner, Oxford and London; E. H. Thierry, Univ. College; C. W. Thomas, Camb. and St. Thomas's; G. L. Timms, St. Thomas's; J. B. L. Tombleson, St. Thomas's; O. S. Tubbs, Camb. and St. Bart.'s; D. Turner, Birmingham; J. T. Turner, Camb. and St. Thomas's; C. M. Vaillant, Oxford and Liverpool; J. M. Vaizey, Camb. and London; O. J. Vaughan-Jackson, Oxford and London; D. P. Viljoen, Witwatersrand and St. Bart.'s; Lilian B. M. Watch, Royal Free; C. J. Watson, Camb. and St. George's; Phyllis E. Watson, Camb. and Charing Cross; Celia Weinstein, Royal Free; H. D. White, Camb. and St. Bart.'s; E. W. Wilkins, Birmingham; R. A. Wilmshurst, St. Thomas's; A. J. K. Wilson, Birmingham; W. Wilson, Camb. and St. Bart.'s; and M. Zinober, Cape and Middlesex.

The undermentioned diplomas were conferred, jointly with the Royal College of Surgeons, upon the following candidates:—

Diploma in Tropical Medicine and Hygiene.—G. Ameratunga, R. M. Buchanan, Dorothy D. Chacko, Jane G. E. F. Cummins, G. C. H. Franklin, H. S. Gear, A. Hoff, C. G. Hoole, S. R. Iyengar, S. Petiyagoda, A. V. Pieris, G. W. Puvimanasingham, H. Richards, J. Rodger, B. N. Sharma, Mabel I. Silver, R. Sivasambandan, J. T. Smith, R. H. B. Snow, C. A. Stanley, R. T. Unruh, and J. E. Walcott.

Diploma in Gynæcology and Obstetrics.—D. P. de Villiers.

Royal Medical Benevolent Fund Guild.

A dance, organised by this Guild, is to be held on June 9th in the Great Hall of the British Medical Association, Tavistock-square, London, S.W. It will be the thirteenth of a series, and the committee is anxious that members of the medical profession and others interested in this fund should lend their support. Tickets (single 6s., double 11s.) may be had from Mrs. Oldershaw, 26, Upper Wimpole-street, W.1.

University of Glasgow.

On April 16th the degree of M.D., with high commendation, was conferred on Dr. George Brown. The names of other recipients of degrees appeared on p. 913 of our issue of *April 23rd.*

University of London Medical Graduates' Society.

The Earl of Athlone, Chancellor of the University of London, will be the guest of honour at the annual dinner of this society to be held at the Langham Hotel on May 11th. Tickets may be had from the hon. secretaries at 11, Chandos-street, W.1.

Institute of Psycho-Analysis

Mrs. Susan Isaacs, D.Sc., will give a course of lectures at the London Clinic of Psycho-Analysis, 36, Gloucester-place, W.1, on Fridays at 8.30 P.M., from May 6th to June 24th, on the Contributions of Psycho-Analysis to Anthropology. Opportunity for discussion will be given at the close of each lecture.

An Italian Medical Prize.

It is announced from Rome that Sir Aldo Castellani, director of tropical medicine and dermatology at the Ross Institute, and physician to the Italian Hospital, London, is among four recipients of the Mussolini prize of 50,000 lire *awarded for special* distinction during the past year.

Royal Institution

*The annual meeting of the members of the Royal Institu*tion of Great Britain was held on May 2nd. Lord Eustace Percy was elected president, Sir Robert Robertson treasurer, and Major C. E. S. Phillips secretary, for the coming year. Among the managers are Mr. Ernest Clarke, F.R.C.S., Sir James Crichton-Browne, M.D., Dr. K. R. Hay, and Sir Arthur Keith, M.D. Among the visitors are Prof. G. E. *Gask, F.R.C.S.,* and Dr. Russell Reynolds.

Medical Missionary Work in the Tropics.

A conference of medical students on this subject will be held at the London School of Hygiene and Tropical Medicine, Keppel-street, London, W.C.1, on May 10th, from 3.30 to 7 P.M.

The Annual Medical Missionary Breakfast of the Medical Prayer Union will be held on May 11th, at the Refectory, University College, Gower-street, W.C.1, at 8 A.M. An address will be given by Dr. C. C. Chesterman, of Yakusu, Congo Belge, W. Africa.

Those desiring to be present at either of these gatherings should communicate with Dr. Tom Jays, Livingstone College, Leyton, E.10.

Mount Vernon Hospital Anti-Cancer Education League.

An inaugural meeting of this League was held on April 27th at the Town *Hall,* Windsor, the mayor, Mr. F. L. Ellen, being in the chair, and Dr. A. D. Crofts, medical officer of health, was also present. Dr. Malcolm Donaldson, in an address [illegible] purpose of the League, said that [illegible] be compared to a gigantic jigsaw puzzle, in which, although pieces had already been put in position, the whole picture would not be clear until the last piece was put in its place. On this great problem were many groups of workers, some studying the cause of cancer, others the treatment, and others again the best methods of early diagnosis.

His chief concern that evening was to stress the importance of early diagnosis. He referred to statistical reports which showed that in early cases of cancer of the breast, 80 per cent. were cured. It had been estimated that less than 50 per cent. of patients suffering from cancer sought medical advice in time to have appropriate treatment, and many could only be alleviated by means of drugs. The reason for this state of affairs was that cancer in its early stages gave rise to no pain and, generally, very slight symptoms. He pointed out that it was impossible to teach the public the symptoms that might suggest the possibility of cancer, and, moreover, that such a course would be inadvisable as it would only lead to people thinking about the subject every time that they felt unwell. It was this fact that had led the authorities at the Mount Vernon Hospital to inaugurate this League, in order to persuade every man and woman over 40 years of age to go and be examined by their doctors twice a year, to see that there was no condition present which, if untreated, might lead to cancer. If people could be induced to follow this method it would rid them of fear of cancer to a great extent. It was hoped to form centres, such as was being formed at Windsor, in every town in England. His address was followed by a demonstration of Dr. R. G. Canti's *film.*

Biochemical Society.

This society will hold its next meeting in the department of biochemistry at Oxford, at 2.30 P.M., on Saturday, May 7th.

Extension of Stannington Children's Sanatorium.

The *Duchess* of Northumberland last week laid th foundation-stone of a new open-air school in the ground of this sanatorium, near Newcastle-on-Tyne. The numbe of beds has increased from 40 in 1904, to 310, all occupied. The sanatorium serves six counties.

Honorarium to a Medical Man.

The Legislature of Trinidad has voted £200 as a honorarium to Dr. J. L. Pawan, government bacteriologis to the Colony, who has proved that bats were the carrier responsible for a recent outbreak of rabies in the island The outbreak was described by Dr. E. Weston Hurst an Dr. Pawan in THE LANCET (1931, ii., 622).

A Middlesbrough Difficulty.

Middlesbrough Hospitals Committee is experiencin difficulty in filling the positions of assistant house surgeon an physician. Two applicants who were offered the pos replied that they had already accepted other appointment It is officially stated that "the financial inducements are ample" and it is suggested that the scarcity is partly due to public authorities engaging so many medical men.

Visit to Italian Health Resorts.

A party of medical men will leave this country next September for a fortnight's tour of spas and other resorts in the Italian Alps, on the Lakes, and on the Ligurian Riviera. The group will be in charge of an English-speaking Italian doctor and will be conveyed through Italy in a special train. Each doctor will have the option of taking his wife, son, or daughter, and at the conclusion of the tour members will be at liberty to visit other parts of Italy. Details *may be had from the British representative* of the Italian State Tourist Department (E.N.I.T.), Major W. Stormont, 16, Waterloo-place, Regent-street, London, S.W.1.

Manchester Royal Infirmary.

The annual report shows that last year there were 11,487 in-patients, an increase of 184, and 48,693 out-patients, a decrease of *2000.* In-patients cost £3 *8s. 2d. per* week, and stayed an average of 17 days, as against 17·64 days in 1930. At the Barnes Convalescent Hospital, Cheadle, 1220 patients were admitted; they stayed 34·58 days on the average and the annual cost per occupied bed was £89 14*s*. 10*d*. By increasing the nursing staff from 224 to 270 it has been possible to reduce working hours. A preliminary training school for nurses has been established.

National Hospital, Queen-square.

A post-graduate course on diseases of the nervous system will be held at this hospital from May 9th to July 1st. Clinical lectures and demonstrations will be given at 3.30 P.M. each weekday except Wednesday and Saturday; there will be teaching in the out-patient department at 2 P.M. each weekday except Saturday, and pathological lectures at noon on Fridays. Further, *a* course of ten lectures on the anatomy and physiology of the nervous system will be given at noon on Tuesdays and Thursdays if there are enough applicants and there will be ten clinical demonstrations, chiefly on methods of examination of the nervous system, at 5 P.M. on the same days. Particulars may be had from the secretary of the Medical School, National Hospital, Queen-square, London, W.C.1.

International Union against Tuberculosis.

The Italian Fascist National Federation against Tuberculosis has placed at the disposal of this Union two scholarships at the Benito Mussolini Institute *in* Rome. These competitive scholarships, each of the value *of* 6000 lire plus board and lodging, are intended to enable foreign medical practitioners to stay at the Institute for the purpose of following a course of studies during an academic year of eight months (Nov. 15th to July 15th). They will preferably be awarded to young physicians who are already familiar with tuberculosis problems. The *kind of* work undertaken will be subject to an agreement between the director of the Institute and the candidate. The scholarships will be awarded at the meeting of the executive committee of the International Union in September next. The names of candidates, accompanied by particulars of their age, qualifications, and professional experience must be forwarded to the secretariat of the Union not *later than* July 15th. No candidature will be taken into consideration unless it has been forwarded by a government or association belonging to the International Union, and applications from Great Britain and Northern Ireland should reach the secretary of the National Union against Tuberculosis (Tavistock House North, Tavistock-square, London, W.C.1) before July 10th.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, May 10th.—5 P.M., THERAPEUTICS AND PHARMACOLOGY. Election of Officers and Council. 8.30 P.M., PSYCHIATRY. Election of Officers and Council. Dr. Noel H. M. Burke: Some Aspects of Mental Deficiency. (Cinematograph Demonstration.)

WEDNESDAY.—5 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Election of Officers and Council. 5.15 P.M., SUBSECTION OF PROCTOLOGY: UROLOGY. Joint Discussions: Urinary Complications of Diseases of the Large Intestine. Openers: Mr. Hugh Lett and Mr. Cyril Nitch, Urology. Mr. J. P. Lockhart-Mummery and Mr. Lionel Norbury, Proctology. Followed by Dr. Cuthbert Dukes, Mr. Landray, Prof. G. Grey Turner, and others.

FRIDAY.—5.30 P.M. (Cases at 4.30 P.M.) CLINICAL. Election of Officers and Council.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.1.

MONDAY, May 9th.—8 P.M., Annual General Meeting. 9 P.M., Annual Oration, by Sir James Berry, on Fallen Idols. Conversazione.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, May 10th.—9 P.M. (at the Great Western Royal Hotel, Paddington, W.2), Prof. J. Ernest Frazer: Some Skulls and Other Old Bones.

HARVEIAN SOCIETY OF LONDON.

THURSDAY, May 12th.—8.30 P.M. (at Paddington Town Hall), Dr. Geoffrey Holmes: Spa Treatment: With Special Reference to British Spas. (Illustrated by film.)

SOUTH-WEST LONDON MEDICAL SOCIETY. Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common, S.W.

WEDNESDAY, May 11th.—9 P.M., Dr. H. Yellowlees: The Lunatick, the Lover, and the Poet.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.

THURSDAY, May 12th.—8.30 P.M., Dr. C. L. C. Burns: Individual Psychology and Catholic Belief.

LECTURES. ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 9th to SATURDAY, May 14th.—LONDON LIGHT AND ELECTRICAL CLINIC, Ranelagh-road, S.W. Evening Course in Physical Medicine, Mondays and Wednesdays at 8.30 P.M. Lectures and demonstrations of cases.—MAUDSLEY HOSPITAL, Denmark-hill, S.E.5. Course in Psychological Medicine. Afternoons only.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. All-day Clinical Course in Diseases of the Throat, Nose, and Ear.—ST. JOHN'S HOSPITAL, Leicester-square, W.C.2. Afternoon course in Dermatology. (The above Courses are open only to Members of the Fellowship.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.6.

MONDAY, May 9th.—10 A.M. to 1 P.M., Gynæcological Ward, Surgical Wards. Genito-Urinary Operations, Skin Department. 2 to 4 P.M., Operations, Surgical Wards. Medical, Surgical, Gynæcological, and Eye Out-patients. 4.15 P.M. (Lecture), Dr. Grainger Stewart: Subarachnoid [illegible]

TUESDAY.—10 A.M. to 1 [illegible] Surgical Demonstration, Throat [illegible] Department. 2 to 4 P.M., [illegible], Surgical, and Throat Out-patients. 4.15 P.M. (Lecture), Mr. Hamblen Thomas: Treatment of Deafness.

WEDNESDAY.—10 A.M. to 1 P.M., Medical Wards, Children's Medical Out-patients. 2 to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Genito-Urinary, and Eye Out-patients. 4.15 P.M. (Lecture). Mr. Simmonds: Injuries and their Medico-Legal Aspect.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 12 noon, Medical Lecture. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients.

SATURDAY.—9 A.M. to 1 P.M., Throat Operations, Medical and Surgical Wards, Surgical and Children's Medical Out-patients. The lectures at 4.15 P.M. on Mondays, Tuesdays, Thursdays, and Fridays are open to all medical practitioners without fee.

UNIVERSITY COLLEGE, Gower-street, W.C.

THURSDAY, May 12th, and following FRIDAY.—5.30 P.M., Prof. W. R. Hess (Zurich): The Autonomic Nervous System.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, May 11th.—Dr. Nathan Mutch's lecture has been postponed.

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, May 12th.—4.30 P.M., Mr. L. E. C. Norbury: Some Complications of Diverticula of the Colon.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.

WEDNESDAY, May 11th.—3 P.M., Mr. F. J. F. Barrington: Symptoms, Signs, and Diagnosis of Renal Tuberculosis.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.

WEDNESDAY, May 11th.—4.30 P.M., Mr. M. Donaldson: Radiotherapy and Gynæcology.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

MONDAY, May 9th.—5 P.M., Dr. H. MacCormac: Treatment of Syphilis.

TUESDAY.—5 P.M., Dr. W. N. Goldsmith: The Nervous System in Relation to Skin Diseases.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Infections of the Skin with Yeast-like Organisms.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, May 10th.—4.15 P.M., Dr. E. B. Leech: Asthma Cures.

UNIVERSITY OF BIRMINGHAM.

WEDNESDAY, May 11th.—4 P.M., Mr. C. J. Bond: Some Aspects of Human Biology. (Fourth of five William Withering memorial lectures.)

THURSDAY.—4 P.M., Prof. Seymour Barling: Operative Treatment of Toxic Goitre. (Ingleby lectures.)

WESTERN INFIRMARY, Glasgow.

WEDNESDAY, May 11th.—4.15 P.M., Dr. A. A. Charteris: Radium Therapy.

Appointments

HENDERSON, D. K., M.D., Ch.B. Edin., has been appointed Physician Superintendent Royal Edinburgh Hospital for Mental Disorders, and Professor of Psychiatry in the University of Edinburgh.

London County Council: BARLING, B., M.D., M.R.C.P. (St. Mary, Islington), FATTI, L., M.B., B.S., M.R.C.S., L.R.C.P. (Highgate), HOOPER, O., F.R.C.S. (St. Stephen's), PEAKE, H. L., F.R.C.S. (St. Olave's), RICHARDS, A. M., M.D. (Dulwich), ROANTREE, W. B., F.R.C.S. (St. Pancras), SHEPHERD, T. (Miss), M.D. (St. James's), SIMMONS, J. H. M.D. M.R.C.P. (St. Alfege's), WILKIE, D., F.R.C.S. (St. Charles'), YOUNG, B. A., M.D., M.R.C.P. (St. Peter's, Whitechapel), Senior Assistant Medical Officers; BAYLEY, A. W., M.B., B.S. (Mile End), BOLAND, C. R., M.D., F.R.C.S. (Hackney), FIELD, A. B. (Miss), M.R.C.S., L.R.C.P. (St. Mary, Islington), GABE, J., F.R.C.S. (St. Alfege's), GIBBS, E. G., M.D., F.R.C.S. (Bethnal Green), HOSEASON, A. S., M.B., B.S., M.R.C.S., M.R.C.P. (St. Giles'), LIBMAN, J., M.R.C.S. (Archway), LINFORD, H. (Miss), M.D. (North Eastern), RATAZZI, L. L., M.B., Ch.B. (St. John's), SELBOURNE, H. A. H., M.D. (Lewisham), Assistant Medical Officers; JOHNSTONE, J. G., M.B., Ch.B. (Princess Mary's Hosp. for Children), Medical Superintendent: NASH. H. K. G., M.R.C.S., L.R.C.P. (St. James'), House Physician,

Certifying Surgeons under the Factory and Workshop Acts: BARNES, W. A., M.B., B.Chir. Camb. (Woburn Sands); CLAYTON-JONES, E., L.M.S.S.A., M.R.C.S. (Cranbrook).

Births, Marriages, and Deaths

BIRTHS.

CARLING.—On May 1st, at Normandy, Alton, Hants, the wife of Dr. W. Russell Carling, of a son.

LANGMEAD.—On April 25th, at The Royal Chase, Tunbridge Wells, the wife of Dr. L. B. Langmead, of a daughter.

PUDDY.—On April 28th, at Point House, Litcham, Norfolk, the wife of E. Ivimy Puddy, M.B., B.S., of a daughter.

SAVIN.—On May 1st, 1932, at 174, Sutherland-avenue, W.9, to the wife of L. H. Savin, M.D., F.R.C.S.—a son.

MARRIAGES.

GROSS—CUNNINGTON.—On April 29th, at St. Anselm's, Davies-street, W., Capt. K. H. A. Gross, I.M.S., to Joan Cunnington, of Gosfield, Essex.

PARKES—MCQUEEN.—On April 27th, at Christ Church, Quinton, Birmingham, Percy Whitehouse Parkes, M.R.C.S., to Mary Isabel, eldest daughter of Dr. and Mrs. A. D. McQueen, Quinton, Birmingham.

DEATHS.

BOURNE.—On April 24th, at Dale View, Willingdon, Henry Bourne, M.B., B.S., late of Devonshire-place, Eastbourne, aged 53 years.

DRUMMOND.—On April 28th, at Saville-place, Newcastle-on-Tyne, David Drummond, Kt., C.B.E., M.A., M.D., D.C.L., LL.D., of Marchbank Wood, Beattock, Dumfriesshire, in his 80th year.

HARE.—On April 25th, Evan Herring Hare, M.A., F.R.C.S., of Hornsey.

LAW.—On April 26th, at Littleham, Exmouth, Alfred Roberts Law, M.D., aged 86.

RODEN.—On April 24th, at The Hollies, Droitwich, suddenly, Percy Austen Roden, M.D., J.P., in his 73rd year.

RODRIGUEZ.—On April 6th, 1932, at Port of Spain, Trinidad, B.W.I., Faustin Albert Rodriguez, M.B., C.M., late Medical Officer, Arima, Trinidad.

SCATLIFF.—On April 29th, Harold Harris Elborough Scatliff, M.A., M.R.C.S., L.R.C.P., of Marine Parade, Brighton, aged 56 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE HEALTH OF MERCHANT SEAMEN IN 1930.

By Fleet-Surgeon W. E. Home, O.B.E.

The annual return for 1930 of deaths on vessels registered in the United Kingdom[1] has been recently issued, much the same in form as last year, though it no longer hints that it provides something like a death-rate. It tabulates the deaths of all seamen in the mercantile marine, and the ages at death of British and foreign seamen. All we want now to provide a death-rate is a considered statement of the numbers habitually at risk, and we should soon get that, as the Interdepartmental Committee has been deliberating now for two years. The return tells us that a census of seamen is now taken every year, by numbers and ages, and the relevant figures for 1930 might well have been printed in this return; formerly the census was taken only every five years. By the kindness of the Board of Trade I was able to find the figures in a supplement to the *Board of Trade Journal* for July 30th, 1931. The "First Crews" of ships were this year (1930) 237,110, but by the census figures, taken on March 31st, the number of seamen employed that day on all British ships were 194,633: 80 per cent. of "First Crews"; 127,518 British seamen, 14,433 foreigners, and 53,682 Lascars.

For British and foreign seamen the ages at death are stated in the return, those from violence, separately, in Table VI.; those by disease, jointly, in Table VII. By ages these deaths are grouped as in the Registrar-General's decennial supplement on occupational mortality, so it would have been convenient if the ages had been similarly grouped in the census, thus giving opportunity for calculating readily death-rates year by year. But death-rates are unfamiliar to the Board of Trade, being really a concern of the Registrar-General, and thus of the Ministry of Health; and the ages in the census are inconveniently grouped. When trouble has been taken to prepare and print four columns of deaths, at ages 20–24, 25–34, 35–44, 45–54, why make that trouble less than half its value by not reporting in each case the numbers from amongst which these deaths arose? Had this been done comparison could have been made with the death-rates of the army or the navy, in neither of which are there any material number of persons above the age of 45. As those in the merchant marine of ages 35–44 and 45–54 are reported together, this comparison cannot be usefully made. The Board of Trade had not this difficulty in mind, but it is implicit in the choice of age-limits they have made. It would be of advantage, too, to print the deaths at the particular ages of British seamen only, or separately, to assist in a comparison with those of other British workers, but we have no figures by reference to which we can interpret the combined ages at death of British and foreign seamen as given.

Though the numbers of seamen are fewer in 1930, the deaths from disease were more (for British seamen 370 against 324), but from violence they were less (316 against 431), and there were 100 fewer lives lost in casualties to the ships. Taking the deaths and census figures, we get a death-rate for British seamen 5·38, for foreigners 6·45, and for Lascars 5·1, figures quite likely to be correct to the first decimal place, and really what more does one want to make an effective comparison possible from year to year? The death-rate in the navy in 1930 was 2·47, in the army the same, but the average age in the army is 23, in the navy 27, and among British merchant seamen 32, and the older the group the higher the death-rate expected. The most frequent causes of deaths of British seamen from violence were: falls overboard or on deck, 46; falls down hatchways, 30; drowned in dock, 40; suicide, 37; missing at sea, 33. Nothing is said in the return, or anywhere else apparently, about the measures taken to diminish these deaths of seamen, while it may be pointed out that three pages of the report of the Chief Inspector of Factories for 1930 were devoted to accidents at the docks and to the assiduous preventive measures taken in behalf of dock labourers.

Among the deaths from disease we find these figures: circulatory system, about 60; pneumonia, 43; respiratory tubercle, 33; malaria, 12; enteric, 9; and small-pox, 1. Who is there to see that British merchant seamen are vaccinated or inoculated as they should be, who will consider how they get pneumonia, or if they suffer from lead poisoning? These are really questions for the Ministry of Health, and will doubtless be handed over to it by the committee. The Home Office, when it had charge of the health in factories, developed a good medical department, but in its 70 years of dealing with the health of seamen the Board of Trade has not got itself even a rudimentary medical staff, but has contented itself with intervening between the seamen and the experts of the Ministry of Health who might save the seamen's health.

Death-rates in 1930

from	pneumonia were	British, 0·33 ..	Lascars, 0·53
	pulmonary tuberculosis were	„ 0·26 ..	„ 0·59

Lascars have by statute 72 cubic feet, British 120. Five Lascars occupy the same space on a deck as three British seamen; are we surprised that the Lascars are more susceptible to pneumonia and pulmonary tuberculosis?

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[1] Return of Shipping Casualties to and Deaths on Vessels registered in the United Kingdom, in the year ended Dec. 31st, 1930. H.M. Stationery Office. 1931. Pp. 8. 9*d*.

BLOOD GROUPS.

A meeting of the Royal Anthropological Institute on April 22nd, with Prof. G. Elliot Smith in the chair, was devoted to a discussion on Blood Groups.

Prof. J. B. S. Haldane began by drawing attention to the relationship between the very old science of anthropology and the young science of genetics. Physical anthropologists had accumulated an enormous mass of material that served certain purposes, but a very critical attitude was necessary when those data were used to support speculations of racial origins. Interpretation had become much more exact since the rediscovery of Mendel's work, but progress had been slowest with man, and much uncritical material in human genetics had been published. The evidence for the existence of genes in man was limited to certain rather rare pathological conditions and to the subject under discussion. Genetics included the facts grouped under heredity and those grouped under segregation; genetic analysis was based on the fact that a parent handed unto his child not characters but self-perpetuating units in the nucleus of the cell—genes or Mendelian factors. The visible expression of a gene varied with circumstances; the gene was, as it were, a photographic plate that needed developing. For instance, there was a gene which made the fat of rabbits turn yellow if their food contained carotene; if the rabbit was fed on swedes, however, the fat remained white. If, therefore, an anthropological character was to yield results capable of genetical analysis it must: (1) be determined by a small number of genes; (2) be separating the population into groups which were not particularly rare; and it must not (3) be strongly affected by environment; or (4) be subject to natural or social selection. All these criteria were so far fulfilled only for the set of characters which determined the blood grouping.

The inheritance of these characters was quite simple; there were only two types of chromosome, and therefore an individual could have only two of these genes; in gametic mitosis only one could pass to the germ cell. The child of an AB parent could thus receive either A or B; the child of two O parents could receive neither; the child of an A could have either two A's or one A and one inactive gene (R), and the same applied to a child of B. It was an absolute rule that the child could not have in its corpuscles anything that was not in the blood of its parents. If an AB married an O the children must have either A or B; none of the children would resemble either father or mother. If one parent belonged to the AB group no child could belong to the O group.

Prof. Haldane then quoted certain data showing how these laws of inheritance had been proved on very large series, notably by Haselhorst. Exceptions of the order of about five in a thousand had been found, but were all explicable as due to illegitimacy. Only one inexplicable case was known: an AB mother had had an O child. In all Mendelian work, however, exceptions of the order of 1/2000 were apt to occur: possibly the mother had had three chromosomes instead of two, or a mutation process had occurred.

RACIAL DISTRIBUTION.

Blood groups would give a clue to racial origins—though a largely negative clue—for their distribution varied in different races, and was affected very slowly, if at all, by environment. Hungarian gypsies, for instance, showed 6 per cent. of AB and 39 per cent. of B, while Hungarian Magyars showed 12 per cent. of AB and 19 per cent. of B, and Indians 9 per cent. of AB and 41 per cent. of B. A map of the world showing the proportions of the B gene gave remarkable "contour" lines, suggesting that a wave of B had started in Central Asia, and spread thence in all directions; B was unknown in Australia and very rare in Esquimos and the aboriginals of North, Central, and South America. The only sample giving more than 30 per cent. of B was taken in the Punjab, but B was also common in the Ukraine. A similar map for A would be difficult to make, because A consisted of two classes (A and A^1) which could only be distinguished by a refined technique.

Other genes by which races could be classified were corpuscular agglutinogens which gave a reaction with rabbit sera: these were called M and N; everybody had M or N, but the proportions varied in different races. Another differentiating quality was the ability to taste bitterness in dry phenyl-thio-carbamide placed on the tongue; about two-thirds of people appreciated no taste. The evidence suggested that this ability was a simple Mendelian recessive, in which case it constituted another differentiating gene unlikely to be influenced by natural or social selection.

Dr. L. S. Penrose said that his tests of over 500 mental defectives had shown only 2·2 per cent. of group AB. The study of blood groups in this country was very much neglected; in Germany a large survey had been made by local practitioners, and in Holland a national survey at a central institution had suggested some correlation between B and dark hair.

Prof. H. H. Woollard said that the centre of Australia had yielded no B at all, but 60 per cent. of A. This suggested that the aboriginal had colonised Australia from one small canoe party. He was of opinion that the blood groups had first appeared, by gene mutation, in a common ancestor of the apes and man.

Prof. Ruggles Gates described his tests of Esquimos in the Canadian Arctic: they were chiefly O, like the Red Indians, but a group at the mouth of the Mackenzie river had shown a very high percentage of B. The absence of A and B from these races indicated early isolation. Probably B had occurred as a mutation very much later than A. In a recent paper, work on Tierra del Fuegans had been described: Twenty-two Onas, living on the mainland, had shown 20 examples of O; 30 out of 33 Yaghans—a small island community numbering only 73 in all—had been B; two Alakalufes had both been B. It was extraordinary to find B—a central Asian characteristic—in this area!

Dr. H. Brewer described two donors who had come to him to be tested for the blood transfusion service; they had been classed as group O and had served satisfactorily four and five times respectively. Then some suspicion had arisen; they had been retested and grouped as "B," subsequently giving satisfactory service in that category.

Prof. Lancelot Hogben said that B was very high—about 23 per cent. in 600 cases—among the Bantu, and also among the Senegalese, about 21 per cent., but the grouping of the Bushmen was roughly that of this country. This indicated a drift of B southward, with the Bantu migration, into a country previously showing little B.

Dr. Morant asked if there were any sex differences in the blood groups.—Mr. G. Powell asked if there was any difference between the higher and lower social classes.—Prof. C. G. Seligman asked if the high percentage of B were associated with Mongol characteristics.

The Chairman said that anthropologists did not yet know how to fit these tentative new facts into existing ideas of race. Information was pouring in at an amazing rate, and it would be rash to try to formulate any comprehensive interpretation at present.

Prof. Haldane, in reply, expressed his preference for the diffusion theory, rather than the idea of a parallel origin. There were no sex differences; some German figures seemed to show a difference between criminals and professors, but class differences had not been fully worked out. B was not associated with Mongol characteristics; probably there had been a big outburst of B from Central Asia after China was more or less settled.

THE DEFILEMENT OF PAINT.

To the Editor of The Lancet.

Sir,—In the springtime many amateur house-painters splash paint on their faces, arms, and hands. The usual paint solvents are paraffin, turpentine, and linseed oil. There are objections to all. Linseed oil, though bland, has to be kept in a bottle and when being used is too easily flowing and spilt. I have discovered that white vaseline mixed in a jar with a requisite quantity of linseed oil and well stirred to a thick creamy consistency is most useful for removing paint spots from the skin without any deleterious effect. The jar can be kept handy and the cream should be thick enough not to spill or run when the jar is inverted. It can be applied with a small clean rag or the finger tip.

I am, Sir, yours faithfully,

London, April 14th, 1932. F. W. W.

COATS, GOWNS, AND SMOCKS.

Improved patterns in white drill coats and gowns for doctors and dentists are now available. Messrs. E. and R. Garrould, Ltd., supply a smock overall with short sleeves, which can be used where a full-length operating gown is not required, and short coats can be had with stand-up or ordinary tailored collars. The dentist's coat has removable buttons down the side and a belt at the back only. The operating gown can be supplied not only in white drill but in sterilisable waterproof material.

Dr. W. Benton (M.O.H., East Ham) informs us *that the son of a medical practitioner of Vienna*, aged 15, who speaks good English, is desirous of visiting England during the vacation, July and August. Board-residence is offered at his home in Vienna suburb, in exchange for the same in or near London, to the son of medical man about the same age. Communications should be addressed in the first instance to Dr. Benton, at the Town Hall, East Ham, E.6.

NOTES, COMMENTS, AND ABSTRACTS

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BY FLEET-SURGEON W. E. HOME, O.B.E.

THE annual return for 1930 of deaths on vessels registered in the United Kingdom[1] has been recently issued, much the same in form as last year, though it no longer hints that it provides something like a death-rate. It tabulates the deaths of all seamen in the mercantile marine, and the ages at death of British and foreign seamen. All we want now to provide a death-rate is a considered statement of the numbers habitually at risk, and we should soon get that, as the Interdepartmental Committee has been deliberating now for two years. The return tells us that a census of seamen is now taken every year, by numbers and ages, and the relevant figures for 1930 might well have been printed in this return; formerly the census was taken only every five years. By the kindness of the Board of Trade I was able to find the figures in a supplement to the *Board of Trade Journal* for July 30th, 1931. The "First Crews" of ships were this year (1930) 237,110, but by the census figures, taken on March 31st, the number of seamen employed that day on all British ships were 194,633: 80 per cent. of "First Crews"; 127,518 British seamen, 14,433 foreigners, and 53,682 Lascars.

For British and foreign seamen the ages at death are stated in the return, those from violence, separately, in Table VI.; those by disease, jointly, in Table VII. By ages these deaths are grouped as in the Registrar-General's decennial supplement on occupational mortality, so it would have been convenient if the ages had been similarly grouped in the census, thus giving opportunity for calculating readily death-rates year by year. But death-rates are unfamiliar to the Board of Trade, being really a concern of the Registrar-General, and thus of the Ministry of Health; and the ages in the census are inconveniently grouped. When trouble has been taken to prepare and print four columns of deaths, at ages 20–24, 25–34, 35–44, 45–54, why make that trouble less than half its value by not reporting in each case the numbers from amongst which these deaths arose? Had this been done comparison could have been made with the death-rates of the army or the navy, in neither of which are there any material number of persons above the age of 45. As those in the merchant marine of ages 35–44 and 45–54 are reported together, this comparison cannot be usefully made. The Board of Trade had not this difficulty in mind, but it is implicit in the choice of age-limits they have made. It would be of advantage, too, to print the deaths at the particular ages of British seamen only, or separately, to assist in a comparison with those of other British workers, but we have no figures by reference to which we can interpret the combined ages at death of British and foreign seamen as given.

Though the numbers of seamen are fewer in 1930, the deaths from disease were more (for British seamen 370 against 324), but from violence they were less (316 against 431), and there were 100 fewer lives lost in casualties to the ships. Taking the deaths and census figures, we get a death-rate for British seamen 5·38, for foreigners 6·45, and for Lascars 5·1, figures quite likely to be correct to the first decimal place, and really what more does one want to make an effective comparison possible from year to year? The death-rate in the navy in 1930 was 2·47, in the army the same, but the average age in the army is 23, in the navy 27, and among British merchant seamen 32, and the older the group the higher the death-rate expected. The most frequent causes of deaths of British seamen from violence were: falls overboard or on deck, 46; falls down hatchways, 30; drowned in dock, 40; suicide, 37; missing at sea, 33. Nothing is said in the return, or anywhere else apparently, about the measures taken to diminish these deaths of seamen, while it may be pointed out that three pages of the report of the Chief Inspector of Factories for 1930 were devoted to accidents at the docks and to the assiduous preventive measures taken in behalf of dock labourers.

Among the deaths from disease we find these figures: circulatory system, about 60; pneumonia, 43; respiratory tubercle, 33; malaria, 12; enteric, 9; and small-pox, 1. Who is there to see that British merchant seamen are vaccinated or inoculated as they should be, who will consider how they get pneumonia, or if they suffer from lead poisoning? These are really questions for the Ministry of Health, and will doubtless be handed over to it by the committee. The Home Office, when it had charge of the health in factories, developed a good medical department, but in its 70 years of dealing with the health of seamen the Board of Trade has not got itself even a rudimentary medical staff, but has contented itself with intervening between the seamen and the experts of the Ministry of Health who might save the seamen's health.

Death-rates in 1930

from	pneumonia were	British, 0·33 ..	Lascars, 0·53
	pulmonary tuberculosis were	,, 0·26 ..	,, 0·59

Lascars have by statute 72 cubic feet, British 120. Five Lascars occupy the same space on a deck as three British seamen; are we surprised that the Lascars are more susceptible to pneumonia and pulmonary tuberculosis?

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[1] Return of Shipping Casualties to and Deaths on Vessels registered in the United Kingdom, in the year ended Dec. 31st, 1930. H.M. Stationery Office. 1931. Pp. 8. 9*d*.

BLOOD GROUPS.

A MEETING of the Royal Anthropological Institute on April 22nd, with Prof. G. ELLIOT SMITH in the chair, was devoted to a discussion on Blood Groups.

Prof. J. B. S. HALDANE began by drawing attention to the relationship between the very old science of anthropology and the young science of genetics. Physical anthropologists had accumulated an enormous mass of material that served certain purposes, but a very critical attitude was necessary when those data were used to support speculations of racial origins. Interpretation had become much more exact since the rediscovery of Mendel's work, but progress had been slowest with man, and much uncritical material in human genetics had been published. The evidence for the existence of genes in man was limited to certain rather rare pathological conditions and to the subject under discussion. Genetics included the facts grouped under heredity and those grouped under segregation; genetic analysis was based on the fact that a parent handed unto his child not characters but self-perpetuating units in the nucleus of the cell—genes or Mendelian factors. The visible expression of a gene varied with circumstances; the gene was, as it were, a photographic plate that needed developing. For instance, there was a gene which made the fat of rabbits turn yellow if their food contained carotene; if the rabbit was fed on swedes, however, the fat remained white. If, therefore, an anthropological character was to yield results capable of genetical analysis it must: (1) be determined by a small number of genes; (2) be separating the population into groups which were not particularly rare; and it must not (3) be strongly affected by environment; or (4) be subject to natural or social selection. All these criteria were so far fulfilled only for the set of characters which determined the blood grouping.

The inheritance of these characters was quite simple; there were only two types of chromosome, and therefore an individual could have only two of these genes; in gametic mitosis only one could pass to the germ cell. The child of an AB parent could thus receive either A or B; the child of two O parents could receive neither; the child of an A could have either two A's or one A and one inactive gene (R), and the same applied to a child of B. It was an absolute rule that the child could not have in its corpuscles anything that was not in the blood of its parents. If an AB married an O the children must have either A or B; none of the children would resemble either father or mother. If one parent belonged to the AB group no child could belong to the O group.

Prof. Haldane then quoted certain data showing how these laws of inheritance had been proved on very large series, notably by Haselhorst. Exceptions of the order of about five in a thousand had been found, but were all explicable as due to illegitimacy. Only one inexplicable case was known: an AB mother had had an O child. In all Mendelian work, however, exceptions of the order of 1/2000 were apt to occur: possibly the mother had had three chromosomes instead of two, or a mutation process had occurred.

RACIAL DISTRIBUTION.

Blood groups would give a clue to racial origins—though a largely negative clue—for their distribution varied in different races, and was affected very slowly, if at all, by environment. Hungarian gypsies, for instance, showed 6 per cent. of AB and 39 per cent. of B, while Hungarian Magyars showed 12 per cent. of AB and 19 per cent. of B, and Indians 9 per cent. of AB and 41 per cent. of B. A map of the world showing the proportions of the B gene gave remarkable "contour" lines, suggesting that a wave of B had started in Central Asia, and spread thence in all directions; B was unknown in Australia and very rare in Esquimos and the aboriginals of North, Central, and South America. The only sample giving more than 30 per cent. of B was taken in the Punjab, but B was also common in the Ukraine. A similar map for A would be difficult to make, because A consisted of two classes (A and A^1) which could only be distinguished by a refined technique.

Other genes by which races could be classified were corpuscular agglutinogens which gave a reaction with rabbit sera: these were called M and N; everybody had M or N, but the proportions varied in different races. Another differentiating quality was the ability to taste bitterness in dry phenyl-thio-carbamide placed on the tongue; about two-thirds of people appreciated no taste. The evidence suggested that this ability was a simple Mendelian recessive, in which case it constituted another differentiating gene unlikely to be influenced by natural or social selection.

Dr. L. S. PENROSE said that his tests of over 500 mental defectives had shown only 2·2 per cent. of group AB. The study of blood groups in this country was very much neglected; in Germany a large survey had been made by local practitioners, and in Holland a national survey at a central institution had suggested some correlation between B and dark hair.

Prof. H. H. WOOLLARD said that the centre of Australia had yielded no B at all, but 60 per cent. of A. This suggested that the aboriginal had colonised Australia from one small canoe party. He was of opinion that the blood groups had first appeared, by gene mutation, in a common ancestor of the apes and man.

Prof. RUGGLES GATES described his tests of Esquimos in the Canadian Arctic: they were chiefly O, like the Red Indians, but a group at the mouth of the Mackenzie river had shown a very high percentage of B. The absence of A and B from these races indicated early isolation. Probably B had occurred as a mutation very much later than A. In a recent paper, work on Tierra del Fuegans had been described: Twenty-two Onas, living on the mainland, had shown 20 examples of O; 30 out of 33 Yaghans—a small island community numbering only 73 in all—had been B; two Alakalufes had both been B. It was extraordinary to find B—a central Asian characteristic—in this area!

Dr. H. BREWER described two donors who had come to him to be tested for the blood transfusion service; they had been classed as group O and had served satisfactorily four and five times respectively. Then some suspicion had arisen; they had been retested and grouped as "B," subsequently giving satisfactory service in that category.

Prof. LANCELOT HOGBEN said that B was very high—about 23 per cent. in 600 cases—among the Bantu, and also among the Senegalese, about 21 per cent., but the grouping of the Bushmen was roughly that of this country. This indicated a drift of B southward, with the Bantu migration, into a country previously showing little B.

Dr. MORANT asked if there were any sex differences in the blood groups.—Mr. G. POWELL asked if there was any difference between the higher and lower social classes.—Prof. C. G. SELIGMAN asked if the high percentage of B were associated with Mongol characteristics.

The CHAIRMAN said that anthropologists did not yet know how to fit these tentative new facts into existing ideas of race. Information was pouring in at an amazing rate, and it would be rash to try to formulate any comprehensive interpretation at present.

Prof. HALDANE, in reply, expressed his preference for the diffusion theory, rather than the idea of a parallel origin. There were no sex differences; some German figures seemed to show a difference between criminals and professors, but class differences had not been fully worked out. B was not associated with Mongol characteristics; probably there had been a big outburst of B from Central Asia after China was more or less settled.

THE DEFILEMENT OF PAINT.

To the Editor of THE LANCET.

SIR,—In the springtime many amateur house-painters splash paint on their faces, arms, and hands. The usual paint solvents are paraffin, turpentine, and linseed oil. There are objections to all. Linseed oil, though bland, has to be kept in a bottle and when being used is too easily flowing and spilt. I have discovered that white vaseline mixed in a jar with a requisite quantity of linseed oil and well stirred to a thick creamy consistency is most useful for removing paint spots from the skin without any deleterious effect. The jar can be kept handy and the cream should be thick enough not to spill or run when the jar is inverted. It can be applied with a small clean rag or the finger tip.

I am, Sir, yours faithfully,

London, April 14th, 1932. F. W. W.

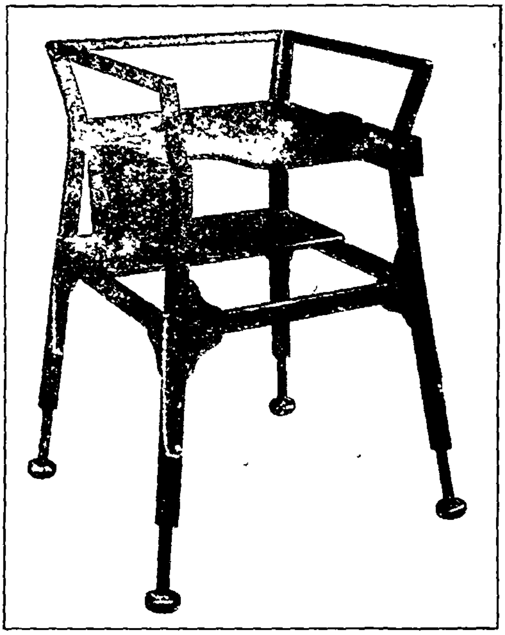
COATS, GOWNS, AND SMOCKS.

IMPROVED patterns in white drill coats and gowns for doctors and dentists are now available. Messrs. E. and R. Garrould, Ltd., supply a smock overall with short sleeves, which can be used where a full-length operating gown is not required, and short coats can be had with stand-up or ordinary tailored collars. The dentist's coat has removable buttons down the side and a belt at the back only. The operating gown can be supplied not only in white drill but in sterilisable waterproof material.

Dr. W. BENTON (M.O.H., East Ham) informs us that the son of a medical practitioner of Vienna, aged 15, who speaks good English, is desirous of visiting England during the vacation, July and August. Board-residence is offered at his home in Vienna suburb, in exchange for the same in or near London, to the son of medical man about the same age. Communications should be addressed in the first instance to Dr. Benton, at the Town Hall, East Ham, E.6.

A WALKING CHAIR FOR CRIPPLES.

In institutions where large numbers of paralysed or disabled children are cared for, it is difficult to ensure that they all have adequate exercise. They are apt to gain weight excessively, and they may become increasingly helpless as they grow older. The difficulty has been met by devising "walking machines" in which the child stands inside a ring mounted on a wheeled frame. Such an arrangement is open to the objection that the occupant has to be lifted in and out of the apparatus at each short exercise, and the construction generally is such that the tendency is to walk in a circular path. Miss Elsie L. Thompson, a nurse at present in charge of crippled children, has designed the combined chair and walking appliance shown in the accompanying illustration. The seat can be raised at will, and the occupant is then able to support himself by the arms and push the appliance in any direction he chooses. Thus he is often enabled to change his occupation—for instance, to fetch fresh playthings or books—without having to get help. The hinged shelf, which forms a table or desk in front of the sitter, can be moved out of the way when the occupant is being put into his seat or taken out of it. The length of the legs can be varied by adjusting the slides and securing them with the locking pins which are attached by chains. The lower part of the appliance is made heavy enough to ensure complete stability. While the whole structure must be readily movable it must not move too freely, and experience has shown that the common type of caged ball rollers form satisfactory feet. Miss Thompson (32, Sherriff-road, London, N.W. 6) has applied for a patent in conjunction with the maker (Mr. H. J. Watson, 71, Fanshaw-street, Hoxton, London, N. 1) from whom the chairs can be obtained.



Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Sen. and Jun. H.S. At rate of £150 and £120 respectively.
Ashton-under-Lyne, District Infirmary.—Res. M.O. £200.
Battersea B.C.—Res. M.O. for Council's Maternity Hospital, Bolingbroke-grove, Wandsworth. £150.
Bedford County Hospital.—Second H.S. At rate of £110.
Birmingham City, Maternity and Child Welfare Dept.—Four Temporary M.O.'s. £9 10*s.* per week.
Birmingham and Midland Eye Hospital, Church-street.—Tw Out-patient Officers. Each 1 guinea per session.
Birmingham, Queen's Hospital.—Surgeon for Out-patients. £50
Bradford Royal Infirmary.—H.P. and H.S. Each at rate o £135.
British Solomon
Burton-on-Trent, nd H.P. £150.
Canterbury, Ke *Chartham.*—Jun Asst. M.O. £350.
Cardiff, City Lodge Institution.—Asst. M.O. £150.
ond H.S. At rate of £15
and School M.O. £800.
Also Hon. Ophth. Surgeo
yal Hospital.—H.S. £15
.—Res. Cas. O. At rate
£100.
Cumberland, Blencathra Sanatorium, Threlkeld.—Asst. Me Supt. £300.
Derby, Derbyshire Royal Infirmary.—Ophth. H.S. £150.
Doncaster Royal Infirmary.—Cas. H.S. At rate of £175.
Durham, Richard Murray Hospital, Blackhill.—Res. M.O. £45
Edmonton, Edmonton and Brentwood Colony, Silver-street— Consultant Neurologist. £125.
Essex County Council.—Jun. Asst. County M.O.H. £500. Al Consultant Ophthalmologist. 50 gns.
Glasgow Royal Mental Hospital.—Physician Supt.
Glasgow, St. Mungo's College, Faculty of Medicine.—Chair Physiology.
Hampstead Borough.—M.O.H. £1000.
Hospital for Consumption and Diseases of the Chest, Bromp S.W.—Jun. H.P. for Frimley Sanatorium. At rate of £10
Hospital for Sick Children, Great Ormond-street, W.C.—Par time Jun. Cas. O. At rate of £150 .Also H.P. and H. Each at rate of £100.
Hounslow, Heston and Isleworth U.D.—Asst. M.O.H. and Scho M.O. £500.
Huddersfield, West Riding Mental Hospital, Storthes Ha Kirkburton.—Asst. M.O. £350.
Ilford, King George Hospital.—H.S. At rate of £100.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Leicester City General Hospital.—Res. M.O. £300.
Leicester, Combined Sanatorium and Fever Hospital, Markfield.— Med. Supt. £850.
Leicester Royal Infirmary.—Res. Asst. Anæsthetist. At rate £250. Also Surgical Dresser. 10*s.* 6*d.* a week.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Lister Institute, Chelsea Bridge-road, S.W.—Morna Macle Research Studentship in Biochemistry. 100 gns.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.
London Jewish Hospital, Stepney Green, E.—Clin. Asst.
Maidstone, Kent County Ophthalmic and Aural Hospital.— Ophth. H.S. At rate of £200.
Manchester, Ancoats Hospital.—H.P. At rate of £100.
Manchester Babies Hospital, Burnage-lane, Levenshulme.—Ju Res. M.O. At rate of £50.
March, Isle of Ely, C.C.—Asst. County M.O.H. and As School M.O. £500.
Middlesbrough, Holgate Municipal Hospital.—Res. H.P. rate of £170.
National Hospital for Diseases of the Nervous System, Que square, W.C.—Res. M.O. £200.
Newark General Hospital.—Res. H.S. £175.
Newcastle-upon-Tyne, Eye Hospital.—Res. H.S. £150.
Oldham Royal Infirmary.—H.S. At rate of £175.
Plymouth Central Hospital.—Res. H.S. At rate of £150.
Plymouth City Hospital.—Res. M.O. £350.
Plymouth, South Devon and East Cornwall Hospital.—Re Anæsthetist and H.S. to Spec. Depts. At rate of £10
Poplar Hospital for Accidents, East India Dock-road, E.—Seco Res. O. £175.
Princess Beatrice Hospital, Richmond-road, S.W.—Hon. Cl Assts.
Reading, Royal Berkshire Hospital.—Res. M.O. £150. Al H.S. £150.
Royal College of Physicians, Pall Mall East, S.W.—Charl ical Medicine. 20 gns.
nd.—Election of Profess
F.H.) School of Medicine
0.
—H.S. for Country Bran
Royal Naval Dental Service, Admiralty, S.W.—Dental Office
Royal Northern Hospital, Holloway, N.—H.S. At rate of £
Ryde, Isle of Wight County Hospital.—Res. H.S. £180.
Salvation Army, Mothers' Hospital, Lower Clapton-road, E.—Se Res. M.O. £150.
Samaritan Free Hospital for Women, Marylebone-road.—Ho Surg. to Out-patients.
South Shields, Horton Hospital.—Two H.S.'s. £150.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. £1
Surrey C.C.—Asst. M.O. £600.
Torquay, Torbay Hospital.—H.S. £175.
Truro Royal Cornwall Infirmary.—H.S. £170.
Wakefield, West Riding of Yorkshire C.C.—Asst. Tuber. £500.
Weir Hospital Grove-road, Balham, S.W.—Jun. Res. M.O. War Memorial Maternity Home. £150.
Weston-super-Mare General Hospital.—Res. H.S. £150.
Winchester, Royal Hampshire County Hospital.—Res. Surg. and H.S. At rate of £200 and £125 respectively.
Wolverhampton, Royal Hospital.—H.S. At rate of £100.

The Chief Inspector of Factories announces vacant appoi ments for Certifying Factory Surgeons at Mildenh (Suffolk) and Woodstock (Oxford).

ADDRESSES AND ORIGINAL ARTICLES

"FALLEN IDOLS."

THE CASE OF APPENDICITIS.*

BY SIR JAMES BERRY, F.R.C.S. ENG., D.C.L.,

CONSULTING SURGEON AND EMERITUS LECTURER ON SURGERY TO THE ROYAL FREE HOSPITAL, LONDON.

FROM the point of view of the patient I sometimes doubt whether the progress of surgery has always been as beneficial as it should have been. Let us take the case of appendicitis. An idol that seems to be worshipped to-day by the majority of our profession, to say nothing of the general public, is the view that acute appendicitis is a terribly fatal disease and that it must be treated by immediate operation whenever possible. A wise old physician, universally respected, and now on the consulting staff of one of the larger London hospitals, and some years my senior, remarked to me only a few years ago, "I think the medical profession has gone quite mad about appendicitis," an opinion with which I cordially concurred. Some months ago I said to a friend of mine, a thoughtful well-informed middle-aged surgeon, attached to one of the London hospitals, "Surgeons nowadays seem to look upon most cases of acute appendicitis as they would upon a case of strangulated hernia, as cases that will die if not at once operated on." And his reply was "Well, is it not so?" Then I put to him this question: "In one year at St. Bartholomew's, in the days when I was house surgeon and house physician, long before the time of frequent operations, 31 patients were admitted to the medical wards with appendicitis, or perityphlitis as it was then called. They were mostly rather bad cases, with considerable swelling in the iliac fossa. Of these 31 cases, how many do you suppose died?" His guess was "something between a quarter and a third," and he was greatly surprised when I told him that the actual number was "one."

Since then I have put the same question to many others of my friends both medical and surgical, and most of them made guesses similar to the above; in one instance the answer was actually one half. The wise old physician already mentioned who had intimate knowledge of those early days, although himself attached to another hospital, was the only one who made an approximately correct guess by answering "two." I do not want to make too much of a single incident like this, drawn from a time when hospital statistics of appendicitis were by no means so accurate as they should have been, but there can be no doubt that in the minds of most of the younger doctors of the present day there is a grossly exaggerated idea of the mortality of acute appendicitis, when it is properly treated on common sense lines, and not necessarily by operation.

MORTALITY FROM APPENDICITIS IN THE OLD DAYS.

It is of course very difficult if not impossible to ascertain what was the real mortality of appendicitis in the old days when it was treated mostly by non-operative measures. A certain proportion of cases ended fatally, but such evidence as I have been able to get shows that it was not a very large proportion; and this is in accordance with my own recollection of those early days. An old friend of mine who has only recently retired after long years of general practice in a small midland town and surrounding country has recently reminded me that some 20 years ago he had asked me to give him directions how to treat his appendix patients when he saw them at the beginning, in their own homes. I had given him what I should call the usual common sense directions on what many would call old-fashioned lines, and he has followed them implicitly. He now tells me that he has never had a patient operated upon in the early stages of an attack and that he has never had a death from appendicitis in his practice during all these years.

There are but few, if any, English counties in which I have not at one time or another stayed in the houses of country doctors and discussed with them the problems of appendicitis. I have talked to many sensible thoughtful country practitioners both young and old, who have ridiculed the idea that appendicitis if properly treated without early or extensive operation *is a very fatal disease. The older men, those* brought up in the days when hospital physicians had much practical experience of appendicitis and gave sound teaching in its treatment, did not as a rule regard it as a very serious disease or find that operative treatment was very often required. All over the country there must still be hundreds of doctors, able thoughtful experienced men, who know as well as I do that appendicitis if properly treated from the beginning, and throughout the illness, by absolute rest in bed, by starvation, and by avoidance of all purgatives and enemata, is a disease of very low mortality; who know that it is only in a small minority of cases so treated that any abscess will form; that if an abscess does form it is better not to be in too great a hurry to open it, but to wait, watch, and exercise a wise discretion in the choice of how and when to operate.

Indeed I have heard it said, long ago, by experienced men well qualified to judge, that in such circumstances there was no mortality. And there was but little exaggeration in this statement. It is incorrect treatment, active injudicious treatment whether medical or surgical—for one may be as bad as the other—that does so much harm in acute appendicitis. If the operator is inexperienced there is to the patient much more danger in opening an appendix abscess prematurely and in the wrong way than there is in leaving it even to the point of allowing it to burst spontaneously, although this, I need hardly say, is not to be desired. Operations done when the abdomen is distended even when done by skilful surgeons, unless they have had much experience of appendicitis operations, are seldom worth doing. Such operations will save a life occasionally. In the majority of cases they deprive the patient of his last chance of life.

THREE PRINCIPAL CAUSES OF DEATH.

In the olden days, when patients were sometimes treated medically by too active treatment, on the ground that "you must do something, you know," there were, in my opinion, three principal causes of death.

1. Feeding the patient when he should have been starved.

2. Giving purgatives and enemata to get the bowels opened when it was of the utmost importance that they should be kept absolutely at rest so long as there was any risk of abscess forming.

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* Part of the 157th Annual Oration delivered before the Medical Society of London on May 9th.

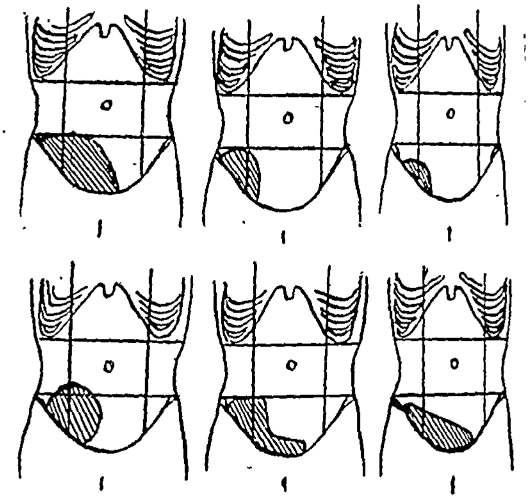
3. Attempting by means of drugs or otherwise to relieve the abdominal distension, which is protective and curative and not, as is so often thought, harmful in itself. Distension is often a grave symptom, but its sudden removal is often much more grave.

A striking instance of the evil effects of suddenly getting rid of distension occurred in the case of an old gentleman whom I saw in the country not many years ago. When I was first called to him there was already very great abdominal distension and the patient was much too ill in my opinion for any operation to have any chance of success. The doctor with whom I saw the case fully agreed with me. For several days he gradually got better; all the more acute symptoms subsided but the abdomen remained much distended and the bowels were not opened. There was no vomiting. Both the doctor and myself knew that the patient was getting well, but the patient's relatives were restive. To satisfy them, a well-known surgeon, a few years older than myself, was called in with my consent, but in my absence. He agreed that no operation was desirable, but unfortunately yielded to the friends' entreaties and, against our wish, prescribed remedies to relieve the distension. The bowels were freely opened, the distension disappeared, but the patient died of collapse a few hours later. There was no post-mortem examination, but there can be no reasonable doubt that this valuable life was thrown away by ill-advised interference. It is one of the very few cases of appendicitis that I have ever lost.

DANGERS OF FREE INCISION.

I am far from presuming to teach hospital surgeons who have had large experience and possess much operative skill in dealing with acute appendicitis. I know that there are numerous general practitioners of much experience and skill in such operations who have an advantage denied to most consulting surgeons in that they see their appendicitis cases earlier than do most hospital surgeons. These also I do not presume to teach. They often obtain admirable results in operating upon really early cases, and it is for them to judge whether the operation is or is not necessary. But this I do know, that anyone, be he general practitioner or hospital surgeon, who blunders into an appendix abscess without knowledge of the pathological condition which he may expect to meet with, and without taking the precaution either to limit his incision to the area guarded by adhesions or otherwise to prevent the diffusion of pus into the surrounding non-adherent peritoneal cavity, is courting disaster. When surgeons say and write, as they often do, that in the opening of an appendix abscess it is immaterial whether this be done through limiting peritoneal adhesions or through the unobliterated peritoneal cavity, they are talking dangerous nonsense. It is just the want of attention to this very point that is a fertile cause of disaster. This I pointed out in two letters to THE LANCET[1] 32 years ago, giving as I thought ample evidence of the truth of what I then stated. In one of these letters I gave statistics, from my own observations and knowledge, of 2 deaths only among 41 cases of abscess opened by incision through adhesions, and of 32 deaths among 39 patients treated by free incision into the general peritoneal cavity, an operation which was then beginning to become fashionable and which is now so common.

I do not claim that the two classes of case are in every respect strictly comparable, but approximately they are representative of the two widely different methods of treating appendicitis by two sets of surgeons in the same hospital in the 'nineties and also at the present time. In the same letter I published the six drawings here reproduced, all of which were drawn by myself in the post-mortem room of St. Bartholomew's from the bodies o actual patients who had died after operations i which no attention had been paid to limitin adhesions. I was comparatively young, only 3 and quite unknown, when I wrote those two lette in which I first strove to stem the rising tide reckless operating that I saw surging all around m Some two years later (1902) Treves gave his celebrate Cavendish lecture.[2] It is a classic that should read by everyone. It is full of practical and usef information as to the pathology, diagnosis, an treatment of appendicitis. Treves wrote, as I di from observations made in the post-mortem room well as in the operating theatre. One passage fro that lecture, rarely if ever quoted nowadays, is great importance:



Drawings of six fatal cases of appendicitis showing the exact area of pus or adhesions in contact with the anterior abdomina wall. All of these had been operated upon by incisions withou regard to the areas of adhesions. It is possible that timel incisions limited to the areas of adhesions might have save all these patients.

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Two Historic Cases.

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1902.	CASE 1.—AGED 61.
Saturday, June 14 ..	Abdominal discomfort.
Sunday, „ 15 ..	5 A.M.: Seen by doctor for *acute attack of pain.*
	Afternoon: Seen by consulting physician. ? Rigor.
Wednesday, „ 18 ..	*First seen by surgeon.* Temperature. Pain and swelling in right iliac fossa. Diagnosis "perityphlitis" (i.e., appendicitis).
Thursday, „ 19	Above signs disappearing.
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Saturday, „ 21 ..	Seen again by surgeon. Swelling nearly gone. Temperature normal.
Monday, „ 23 ..	Seen by surgeon.
Tuesday, „ 24 ..	OPERATION. Limited incision into intraperitoneal abscess. Much foul pus drained. Appendix not removed, not seen, not felt.
Afterwards ..	.. No recurrence. Lived nearly eight years.

1925.	CASE 2.—AGED 54.
Sunday, Feb. 22 ..	Very well all day.
Monday, „ 23 ..	In night slight abdominal pain.
	9 A.M.: Seen by doctor.
	5.30 P.M.: *Severe abdominal pain*, doctor sent for.
	6 P.M.: Tenderness and slight rigidity in right iliac fossa.
	9 P.M.: First seen by surgeon. Immediate operation to be done. Moved to nursing home.
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Saturday, „ 28 ..	Death. Post-mortem examination.

Both patients were treated, as was but natural in the case of such important personages, by famous surgeons of very large experience, probably the best surgeons that could be found in either country. I need hardly say that no shadow of blame could be attached to either of them. Each undoubtedly treated his patient by the method which he thought was best, and in both instances the operative treatment adopted, although widely different in the two cases, was in accordance with prevalent surgical opinions at the respective dates.

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Of the first case I can tell you something which is apparently not generally known by the present generation of medical men, still less by the general public. It has been well known to me for 30 years. and after this long lapse of time, I think that in the public interest it is only right that it should be known. I have not the slightest doubt that H.M. King Edward VII. owed his life to the wise discretion and skilful treatment, perhaps I should rather say the wise avoidance of any active treatment by his advisers, both medical and surgical, until the right time was judged to have come for surgical interference. And mark you, this right time was nine days after he had been first seen by the attending physician, and no less than six days after he had been first seen by the operating surgeon, six days after the time when on June 18th (I quote from the more or less official report) "the temperature was [then] elevated, there were swelling and tenderness in the right iliac fossa—in short there were symptoms of perityphlitis." I should like to ask you how many enthusiastic surgeons at the present day under the influence of the prevalent modern teaching would have refrained from operating at this much earlier period. As might have been foretold by anyone of much experience, and doubtless was foretold by the wise men under whose care he was, these acuter symptoms subsided; later the King was brought to London and next day, not the same day, an operation—as all the world soon knew—was performed upon him. Within a few hours of the performance of this operation I received a full account of it from one of the Serjeant Surgeons who was present and who saw exactly what was done. Later I received corroborative testimony from one of the physicians who was also present.

And what was the operation? All the world knew that it was an operation for appendicitis, that the King made a good recovery and that he lived nearly eight years longer and that he never had any recurrence. Few people knew even at that time that the appendix was not removed, that no search for it was ever made, that it was neither seen nor felt. A careful incision was made low down until an abscess was reached and opened; tubes and gauze were inserted and nothing more was done. What would have happened had this case occurred 25 years later, under the influence of the modern teaching that an appendicitis patient should be operated upon as soon as he is seen by the surgeon and the sooner the better? Who can doubt that most enthusiastic modern surgeons if they had followed their own teaching would have opened the abdomen freely, that the appendix would have been removed. or that, at any rate, an attempt would have been made to remove it. After a large experience of cases that I have seen, treated by both methods, and still more that have been related to me, I have but little doubt that the patient would have had little chance of surviving as long as eight days, to say nothing of eight years.

There is no little irony in the fact that the popularity of the modern operation of treating appendicitis by free incision and removal of appendix and abscess without regard to limiting adhesions is largely based upon ignorance of what was really done at this famous operation.

II.

Let us turn, by way of contrast, to the second case. Twenty-three years have elapsed. surgical fashions have changed. The septic focus, this dangerous appendix, must be removed at the earliest opportunity, and at any cost. Surgical technique has greatly improved, it is true, but the disease called

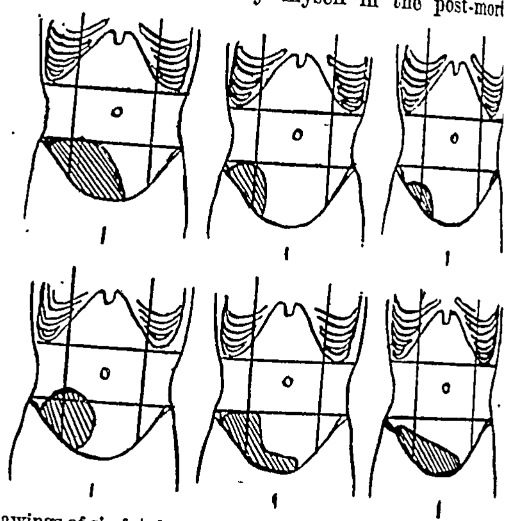
3. Attempting by means of drugs or otherwise to relieve the abdominal distension, which is protective and curative and not, as is so often thought, harmful in itself. Distension is often a grave symptom, but its sudden removal is often much more grave.

A striking instance of the evil effects of suddenly getting rid of distension occurred in the case of an old gentleman whom I saw in the country not many years ago. When I was first called to him there was already very great abdominal distension and the patient was much too ill in my opinion for any operation to have any chance of success. The doctor with whom I saw the case fully agreed with me. For several days he gradually got better; all the more acute symptoms subsided but the abdomen remained much distended and the bowels were not opened. There was no vomiting. Both the doctor and myself knew that the patient was getting well, but the patient's relatives were restive. To satisfy them, a well-known surgeon, a few years older than myself, was called in with my consent, but in my absence. He agreed that no operation was desirable, but unfortunately yielded to the friends' entreaties and, against our wish, prescribed remedies to relieve the distension. The bowels were freely opened, the distension disappeared, but the patient died of collapse a few hours later. There was no post-mortem examination, but there can be no reasonable doubt that this valuable life was thrown away by ill-advised interference. It is one of the very few cases of appendicitis that I have ever lost.

DANGERS OF FREE INCISION.

I am far from presuming to teach hospital surgeons who have had large experience and possess much operative skill in dealing with acute appendicitis. I know that there are numerous general practitioners of much experience and skill in such operations who have an advantage denied to most consulting surgeons in that they see their appendicitis cases earlier than do most hospital surgeons. These also I do not presume to teach. They often obtain admirable results in operating upon really early cases, and it is for them to judge whether the operation is or is not necessary. But this I do know, that anyone, be he general practitioner or hospital surgeon, who blunders into an appendix abscess without knowledge of the pathological condition which he may expect to meet with, and without taking the precaution either to limit his incision to the area guarded by adhesions or otherwise to prevent the diffusion of pus into the surrounding non-adherent peritoneal cavity, is courting disaster. When surgeons say and write, as they often do, that in the opening of an appendix abscess it is immaterial whether this be done through limiting peritoneal adhesions or through the unobliterated peritoneal cavity, they are talking dangerous nonsense. It is just the want of attention to this very point that is a fertile cause of disaster. This I pointed out in two letters to THE LANCET[1] 32 years ago, giving as I thought ample evidence of the truth of what I then stated. In one of these letters I gave statistics, from my own observations and knowledge, of 2 deaths only among 41 cases of abscess opened by incision through adhesions, and of 32 deaths among 39 patients treated by free incision into the general peritoneal cavity, an operation which was then beginning to become fashionable and which is now so common.

I do not claim that the two classes of case are in every respect strictly comparable, but approximately they are representative of the two widely different methods of treating appendicitis by two sets surgeons in the same hospital in the 'nineties also at the present time. In the same letter I p lished the six drawings here reproduced, all which were drawn by myself in the post-mort



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room of St. Bartholomew's from the bodies of actual patients who had died after operations in which no attention had been paid to limiting adhesions. I was comparatively young, only 39, and quite unknown, when I wrote those two letters in which I first strove to stem the rising tide of reckless operating that I saw surging all around me. Some two years later (1902) Treves gave his celebrated Cavendish lecture.[2] It is a classic that should be read by everyone. It is full of practical and useful information as to the pathology, diagnosis, and treatment of appendicitis. Treves wrote, as I did, from observations made in the post-mortem room as well as in the operating theatre. One passage from that lecture, rarely if ever quoted nowadays, is of great importance:

> "There are advocates of what may be called indiscriminate operation. They use terms of this sort—'You must operate; the appendix is ruptured; there is a perforation; there is acute peritonitis; there is gangrene.' And mark—and this is the point I want to draw attention to—these expressions are used exactly in the same sense as you use such expressions as 'There is a perforation of the bowel; there is a perforating ulcer of the stomach; there is gangrene or hernia of the intestine.' And so they say an operation must be carried out even before a reasonable diagnosis has been made, as soon as an attack is suspected.
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> "What I very seriously object to is this: that the two things are put in the same category. It is an absolutely false analogy and misleading. Is it for one moment reasonable to put perforation of the appendix in the same category with perforation of the stomach? It is monstrous. Not only can a perforation of a fair size occur in the appendix but a fair degree of gangrene may be met with without causing serious symptoms. I have found a concretion lying outside the appendix one month after an attack, when all the symptoms have subsided and without a single drop of pus."

Thus spoke Treves, from his own observations. From my own post-mortem observations I can fully confirm the truth of what he says. In the dead body of a person who had died of a totally different disease, I have myself seen an appendix the middle third of which had been completely destroyed by gangrene many years previously. It was represented rely by a slender fibrous cord. And yet there had rer been an operation and if there had been an ccess, as was probably the case, it had been npletely absorbed without discharging either ernally or internally. Such is the marvellous uperative power of the peritoneum.

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Another ruler of a great European State, President Ebert, also an oldish stout man, but seven years younger than the first, is on a certain Sunday (Feb. 22nd, 1925) in his usual health. In that Sunday night he felt a dragging pain in the abdomen of which he told his doctor, when next morning (Monday the 23rd) the latter paid a casual visit that had been arranged some days before. At 5.30 P.M. there was more pain; at 6 P.M. the doctor found marked tenderness in the cæcal region with slight rigidity. At 9 P.M. the patient was first seen by the surgeon, a university professor, a man of world-wide fame, one of the most celebrated and experienced in his country. On the ground of the local condition, and because it was considered to be an early operation (*Früh-Operation*) it was agreed that an immediate operation was required. The patient was removed to a nursing home and at midnight, that is, only three hours after he had been first seen by the surgeon, a free incision was being made into the abdomen and the appendix was removed together with much non-odorous purulent fluid. The intestines were much distended and it is expressly stated that the pelvis was quite free from fluid. For a day or two the patient seems to have done fairly well. Then distension, rapidity of pulse, restlessness, sweating, and so forth set in and on the sixth day (Feb. 28th) the patient died.

As I read the full and detailed original official account of this modern "early" operation, now so fashionable, when it was first published[3] I could not help feeling that I was back again in the good old days at St. Bartholomew's in the 'nineties. Back in the days when I, as *surgical registrar*, was myself seeing such things done and recording them in the post-mortem book and in my annual surgical reports.

Hospital Experience.

I have no reason to suppose that the treatment of appendicitis at St. Bartholomew's in the 'nineties differed materially from that which pertained at most other London hospitals at the same period. Corroboration of this view seems to me to be afforded by the admirable paper[4] published in 1904 by Cuthbert Wallace and Percy Sargent which gives details of all such cases treated at St. Thomas's Hospital during the ten years ending December, 1903.

Although I differ from them in some of the conclusions they drew from these cases, I cannot refrain from expressing my appreciation of the great value of this and similar reports based on the careful and detailed study of large numbers of cases. I wish very much that I had written a similar report on the cases that were under my observation at St. Bartholomew's at much the same period, instead of publishing them merely in the obscure and seldom read appendices to the statistical tables of that hospital. St. Thomas's has long been famous for the excellence of its abdominal surgery, and, if I may be permitted to say so, its reputation in this respect has recently been well maintained by a second equally admirable paper[5] published by B. R. Sworn and G. M. Fitzgibbon, another pair of surgical registrars at this same hospital. This latter paper is on the same lines as that of their distinguished predecessors, and deals with the ten years 1920 to 1929, inclusive.

Without entering into any discussion of the conclusions arrived at by the authors of these papers, I should like to draw attention to the facts contained in Table III. of the second paper and to the third conclusion which is that "if a palpable mass is present the best results are obtained by conservative treatment, where this is possible." This seems to me to be a notable advance on much of modern teaching.

I do not wish to discuss the question of removal of the appendix in a quiet interval. We all know that it is an excellent operation, although we also know that it is performed much too frequently and very *often when there is nothing at all the matter* with the appendix. Nor do I wish to say anything about the much discussed question of operating in the very early stage of acute appendicitis, an operation which is so fashionable at the present day. Personally I seldom see cases at this very early stage and when I do see them I rarely find it necessary to operate upon them. Throughout my life I have adopted the plan of not being in any hurry to operate, except in very rare and exceptional cases. Never have I had any reason to regret this practice.

I have been told that appendicitis is more common than it used to be; it has also been suggested to me that the type of infection has become more virulent. I can find no evidence for either of these statements and I do not believe them to be true. That the disease is recognised and diagnosed more frequently, and that active treatment is adopted far more often, there can of course be no shadow of doubt. That deaths are more common now than formerly is apparently an undoubted fact. According to the Registrar-General's latest published statistics the total deaths from appendicitis in England and Wales for the year 1930 were 2941.

It is not improbable that I shall be blamed for having again brought forward these views about the treatment of appendicitis. I shall probably be told that I am old-fashioned, not up to date, or that I am trying to set the clock back. I should maintain on the contrary that I am trying to introduce a little more sanity into the present-day treatment of acute appendicitis, a little more discrimination and judgment in the choice of operation, and when and how it should be performed when it is really necessary, a little less reliance on the hard-and-fast rule, adopted by so many, of operating at any and all stages—a rule so easy to follow, but often so disastrous to the patient.

I have spent half a century in watching and studying appendicitis in all its various moods and forms. I have seen nearly every form of treatment from the simplest to the most heroic. I do not believe that I can be wrong in my conclusions, I can only tell you what I believe to be the truth. Looking around me I am inclined to say that the prevalent surgical treatment of appendicitis, though still holding the position of an idol, is an idol whose pedestal is beginning to totter.

KING GEORGE HOSPITAL, ILFORD.—In 1931 the income was £20,303, and the year closed with a credi balance of £22. Thanks to the extension opened by the King last summer, the beds have been increased from 74 to 130, and the average daily number of in-patients consequently went up from 66·75 in 1930 to 97·56. On the average they remained for nearly three weeks; the average cost per bed was £3 5s. 2d. There were 7657 out-patients at Ilford and 6180 at the Becontree centre and, together, there were more than 61,000 attendances as compared with a total of 4000 patients and 12,130 attendances in 1930. In-patients increased by 107,—

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[3] Deut. med. Woch., 1925, li., 418.

[4] Report of 1075 Cases of Appendicitis. St. Thomas's Hosp. Reports, 1904, vol. xxxiii.

[5] Analysis of 2126 Cases of Acute Appendicitis. Brit. Jour. Surg., Jan., 1932.

THE MODE OF ACTION OF VITAMIN D.

THE "PARATHYROID" THEORY: CLINICAL HYPERVITAMINOSIS.

By Leslie J. Harris, D.Sc., Ph.D.

(From the Nutritional Laboratory, University of Cambridge and Medical Research Council.)

Reference has been made in recent articles[1] to two important questions, the first of fundamental theoretical interest, the second of more immediate practical concern. Firstly, does vitamin D act by stimulating parathyroid function? Secondly, what danger is there of hypervitaminosis being induced clinically? Although these questions are still freely debated, it is my opinion that recent work has gone a long way towards providing reasonably definite answers to them both, and it may prove useful to summarise the evidence in bare outline.*

Action of Vitamin.

A review of the literature relating to vitamin-D deficiency, published several years ago,[5] led to a view of vitamin D action which has more recently been substantiated by intensive studies on the effects of vitamin excess, carried out in the Cambridge Nutritional Laboratory. Arguments deduced from vitamin deficiency may be summarised first.

PATHOGENESIS OF RICKETS.

In vitamin-D deficiency in humans or in experimental animals, as has been repeatedly shown, there is inadequate utilisation of the food calcium, or phosphate, or both, or, more correctly, an increased loss in the fæces. It may be that too little Ca and/or P is absorbed from the gut, or alternatively that too much is re-excreted back into the gut: possibly both mechanisms are involved—the evidence does not permit a definite decision at present—but we are entitled to say that the *net absorption* is decreased in vitamin-D deficiency.†

The inadequate net absorption can next be correlated with a deficient level of one or both of these elements in the blood stream. This diminution in the blood Ca or P, or the Ca × P product, is the real immediate cause of the bony irregularities and the clinical manifestations; so that rickets is aptly described as essentially a disease of the blood rather than the bone. Most frequently, actually, it is the blood phosphate and not the calcium which tends to be low in clinical rickets (low-phosphate rickets), but low-calcium rickets has also been described and readily produced experimentally; a low blood calcium in the avitaminosis is the cause of tetany. In *juvenile* and *adult rickets*, too, the pathogenesis is the same—viz., inadequate net absorption of Ca and/or P, hypophosphatæmia and/or hypocalcæmia, and hence a resulting defective calcification of newly forming bone tissue (or a similar net loss of mineral matter from fully grown bone, which is to be recognised not as a static but as a dynamic structure continuously gaining and losing mineral salts).

It is important to realise that deficient calcification in newly forming bone tissue follows necessarily whenever the blood Ca × P is low. Once we restore sufficient vitamin D to the diet, the net absorption improves, the hypophosphatæmia (or hypocalcæmia, whichever is at fault) is rectified, and consequently adequate calcification can now once again take place, so that evidence is seen of healing of the rickets (or there is cure of the tetany). The brilliant experiments of Shipley[6] and Robison[7] and their co-workers show that the same considerations apply to the calcification of bone in vitro.

A slice of defectively calcified rachitic bone will recommence to calcify normally when it is placed in saline having an adequate Ca × P product, or in serum from a normal animal—i.e., with the normal Ca × P product—but it fails to calcify when the Ca × P is low, as in serum from a rachitic animal. In other words, the extent of calcification is governed by the Ca × P product of the fluid medium bathing the bone.

The exact mechanism concerned in the actual precipitation of the calcium from the blood into certain sites in the bony tissue we know to depend, inter alia, upon the presence in the latter of an enzyme, phosphatase,[8] whose activity, be it stressed, remains fully normal in rickets.[9] Whatever may be the complexities of the calcifying mechanism itself, we may conclude that the error in rickets is not primarily in the bone but in the inorganic composition of the blood, and that vitamin D has the appearance of increasing the concentration of Ca and/or P which can be carried in the blood stream.‡

Admittedly the theory of vitamin D action outlined above has not yet won general acceptance. The orthodox continental view is that vitamin D acts directly on the bone; and no less an authority than Alfred Hess (for example) concludes that in spite of much experimentation no answer can yet be given to the question, why rachitic bone remains uncalcified, that the metabolic work on infants suffering from rickets presents a "mass of material that it is impossible to appraise," and that the main action of vitamin D appears to be other than on gut absorption of Ca and P.[10] But the theory accounts so consistently not only for the facts already mentioned but also for the phenomena of hypervitaminosis (see below) and for a further variety of observations now to be mentioned, that in my opinion little doubt can remain as to its essential correctness.

INFLUENCE OF FACTORS OTHER THAN VITAMIN D.

Obviously enough, for the vitamin to be effective in procuring an adequate net absorption of Ca and/or P there must be a sufficiency, absolute or relative, of available calcium and/or phosphate in the gut. Therefore, additional factors which must also to a large extent influence the net absorption (and the blood figure, and hence the consequent calcification) are the following: the Ca and P content of the diet; the Ca–P ratio of the diet (this affects the solubility of the Ca salt, and hence the ease of absorption); the acid-base ratio (which also governs the solubility, under certain conditions), &c. A high-Ca low-P diet will tend to produce hypophosphatæmia, and hence low-phosphate rickets, while a low-Ca high-P diet will tend towards hypocalcæmia and low-calcium rickets. All these expectations are borne out by the observed results.

Several puzzling observations may perhaps be explained upon the lines of the general theory given in the foregoing discussion.

(1) For example, it has been shown that in experimental low-phosphate rickets a change to a diet richer in phosphate will suffice to bring on sudden tetany. It suggests itself to the writer that the explanation here may be simply as follows: the provision of extra phosphate will force up the level of the phosphate in the blood; and, since we are to suppose that the deficiency of vitamin D keeps the Ca × P product low, it follows that the Ca must become

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* The details of the experimental work principally referred to in the present paper, together with an extended bibliography, were given elsewhere (Harris and Innes, 1931[2]: see also earlier papers[3, 4]).

† *Net absorption.* I have suggested[2] the use of this expression for denoting the intake minus the fæcal excretion. It is, of course, a measure of the gross absorption less the amount re-excreted back into the bowel.

P for brevity, denotes *inorganic* phosphate, not total phosphorus.

‡ The direct addition of irradiated ergosterol to serum in vitro does not suffice to increase the amount of calcium and phosphate which can be dissolved in it, according to unpublished work by the writer.

relatively depressed, and so tetany will ensue. (Other things being equal, a rise in blood P is accompanied by a fall in Ca, and vice versa.)

(2) Again, it is known that in low-phosphate rickets simple starvation may suffice to bring about evidence of healing in the rickety bone. In this case the explanation may well be that the blood phosphorus becomes raised as a result of the breakdown of organic phosphorus of the tissues and so gives rise to the observed calcification.

(3) Finally, an explanation may be sought for the observation that whereas in humans or dogs simple deprivation of vitamin D suffices to bring on rickets, in rats it is necessary to disturb the salt balance as well. There can be *little doubt that here the explanation lies in the exceptional power of the rat to make full use of any calcium or phosphate obtained in its diet.* Direct measurements show that whereas with either the dog or the human the utilisation of normal amounts of Ca and P becomes vanishingly small in the absence of vitamin D, with the rat the utilisation still remains comparatively good. Hence we can understand why it becomes necessary in order to secure frank rickets in the rat to upset the salt balance in addition; by so doing one is putting a further obstacle in the way of adequate absorption—e.g., in the case of the high-Ca low-P rachitogenic diet by rendering the Ca and P relatively insoluble.

HYPERVITAMINOSIS D.

Studies in the Nutritional Laboratory during the past three and a half years on the effects of vitamin D excess have served to substantiate the views summarised above as to the nature of vitamin D action. They have also provided a rational explanation of the nature of the ill-effects seen in the hypervitaminosis.

The empirical fact that excessive doses of irradiated ergosterol are toxic was first recorded by the German observers Pfannenstiel [11] and Kreitmair and Moll,[12] the latter drawing attention to the presence of calcium deposits in the soft tissues; but they were unable to throw any light on the meaning of the toxicity, suggesting only that the loss in weight of the experimental animals seemed to indicate an increased basal metabolic rate,[12] and that the lesions might be compared with cholesterol arterio-sclerosis. I predicted that the effects of vitamin excess would be found to stand in logical contrast with those of a shortage, the mode of action of the vitamin in excess being essentially an intensification of its normal action when given in small amounts. We wrote [3]:

> "It would appear that there are low and high threshold values for vitamin D, below and above which there are caused deficient and excessive values respectively of blood phosphorus and/or blood calcium and resulting calcification."

A considerable amount of experimental work has served to confirm this view. Summarising our results in other words, we have shown that just as vitamin-D deficiency causes inadequate net absorption, low blood Ca and/or P, and resulting inadequate calcification, so vitamin D excess, on the other hand, brings about a greatly increased net absorption,[2] a tendency to hypercalcæmia and/or hyperphosphatæmia,[2, 4] and excessive formation of densely calcified new bone.[2, 13] These experimental results were interpreted as follows [2]:

> "An increased vitamin D intake promotes increased absorption of Ca and/or phosphate from the gut (or diminished excretion into the gut), so tending to raise the level in the blood. With inadequacy of vitamin D, the blood fails to secure sufficient Ca and/or phosphate; with moderate amounts the blood succeeds in maintaining its approximate constancy of composition, while with large overdoses, hypercalcæmia and/or hyperphosphatæmia cannot be averted."

The overcalcification of bone is strikingly shown by radiogram or histological section (Figs. 1 and 2); the excessively densely calcified spongiosa are seen reaching far into the marrow cavity.‖ Analogous changes occur in the teeth; the cement becomes overcalcified and a remarkable overgrowth of cementoid is formed, which may become ankylosed to the alveolar bone; abnormal new deposits of dentine are put down (Fig. 3). Extensive metastatic calcium deposits are also found in the soft tissues, as originally noted by Kreitmair and Moll,[12] notably in the kidney and in the artery walls (particularly the aorta). There seems little doubt that these are due to the precipitation of the calcium salts from the *highly saturated blood, and must be ascribed directly* to the hypercalcæmia and/or hyperphosphatæmia per se, for the same result accrues also whenever the blood calcium or phosphate is raised to abnormal levels by other means—e.g., by administration of excessive calcium and phosphate, or by means of parathormone (see below). It is worthy of note that the kidney should be one of the sites most liable to receive massive calcareous deposits; and although admittedly this may be favoured by the immensely increased concentration of calcium salts passed through the organ, it can scarcely be without significance that the kidney is known to be richly provided with phosphatase, the enzyme which in bone is concerned in the process of depositing calcium. In fact I am informed by Dr. Robison that the kidney and the aorta among the soft tissues are exceptionally rich in phosphatase, and these, it will be noted, are the very sites which (after the bone) become most extensively calcified in hypervitaminosis.§ To complete our comparison between vitamin excess and deficiency, it may be mentioned that even the muscles have been shown to have an abnormally high Ca or P content in hypervitaminosis, contrasting with the deficiency common in rickets.

It has been shown further by the Cambridge workers that as the hypervitaminosis *proceeds*, abnormally large amounts of phosphate and calcium are excreted in the urine.[3, 4, 14, 15] This, we would suggest, is readily accounted for as the natural response of the kidney, tending as it does towards riddance of the excess present in the blood, and here once again the same effect is seen in hyperphosphatæmia or hypercalcæmia induced by other means.

It was anticipated that the effects of vitamin D when given in excess would depend largely upon the Ca : P intake just as they do with minimal allowances of the vitamin and in hypovitaminosis. This has proved to be so. Each increase in the amount of calcium in the *diet results*, we find, *in an increased severity* of hypervitaminosis, for any given overdose of vitamin D.[2, 16] This is the result to be expected: the greater the amount of Ca actually available for absorption the greater will be the ill-effects of excessive absorption and the attendant hypercalcæmia. This observation of course provides only indirect evidence of the action of vitamin excess upon net absorption; but direct measurements have been made to establish the issue beyond doubt. It is of interest to note (see Figs. 4 and 5) how clearly each extra addition of vitamin D to a diet tends steadily to raise the net absorption, while *if the excess* vitamin is suddenly withheld the diminution in net absorption which is to be expected on the basis of our theory sets in with dramatic intensity (Watchorn[15]), so tending to alleviate the effects of the hypervitaminosis.

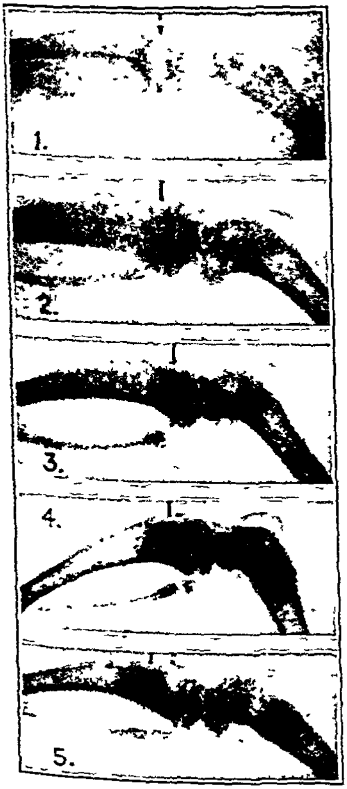
‖ With excess vitamin D osteogenesis is greatly increased, but I have suggested that this does not necessarily indicate any direct action of the vitamin upon the bone cells, for one may imagine that the formation of new bone is stimulated by and dependent on the previous calcification of the osteoid.

§ The presence of phosphatase in such tissues as kidney may possibly occasion surprise, but it must be realised that the "function" of the enzyme is to convert *organic P into soluble inorganic phosphate—an action* which clearly might there serve a useful purpose—and that under more normal conditions the secondary effect, the precipitation of calcium salts, would not be involved in sites outside the bone.

Many of the findings first reported from this laboratory, such as the raised blood calcium or phosphate, the increased urinary excretion, the excessive calcification of bone, and the influence of the Ca : P intake, have now been repeatedly confirmed by workers elsewhere, and there can be little doubt about the reality of the phenomenon of hypervitaminosis. The suggestion that the toxic action was due not to vitamin D but to the presence of toxic by-products—produced, it was claimed, when irradiation was carried out by the commercial German method in alcohol but not by the English method in oil[17, 18]—has not been substantiated. The German workers Holtz[19] and Windaus[20] supposed the toxic "calcifying" substance to be different from the antirachitic, but no one has succeeded in obtaining a preparation which is antirachitically active and at the same time free from the characteristic toxic effect when given in excess.¶

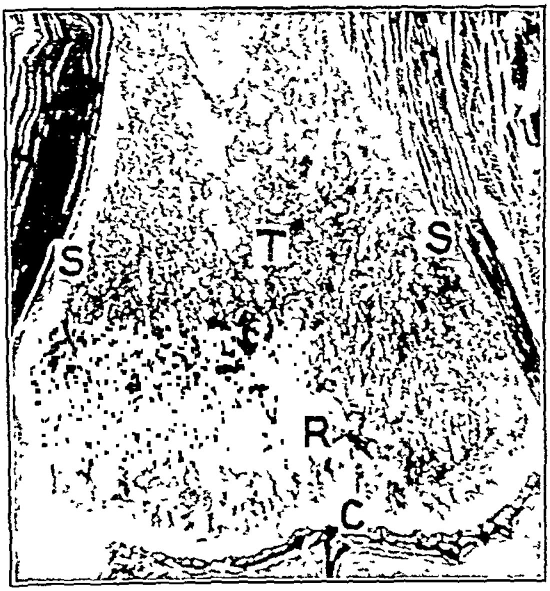
Additional unpublished work is in good conformity with theory. Thus while the administration of vitamin D excess appears to have little or no significant influence on the phosphatase activity of the bones, experiments in collaboration with Dr. Robison show that the hypercalcæmic or hyperphosphatæmic serum of rats suffering from hypervitaminosis will induce an abnormally heavy calcification in bone slices in vitro—no such stimulation of calcification has been demonstrated for the vitamin itself acting direct upon the bone. As to the increased net absorption caused by vitamin D, the importance of excretion into the gut, as compared with absorption from the gut is being further studied. Whether the increased net absorption means that the vitamin acts in any primary sense upon gut function cannot be guessed without further work: diffusibility through the gut wall as affected by vitamin D is now being examined.

FIG. 1.



Radiograms of knee-joints of rats: rickets, normal and hypervitaminosis. (1) Rickets showing defective calcification at growing end. (2) Normal, adequately calcified. (3) Early stage of hypervitaminosis, showing commencement of excessive calcification at growing end. (4) Same, more advanced. (5) Later stage, complicated by severe illness and cessation of osteogenesis, showing less densely calcified band nearest epiphysis.

FIG. 2.



Advanced stage of hypervitaminosis in growing rat. Distal end of femur (×21), showing excessive bone formation, the spongiosa (T) extending far into the marrow cavity. Secondary resorptive changes are apparent also in the cortex of the shaft (S), and to a less degree in the spongiosa (R) nearest the growth cartilage (C).

SECONDARY CHANGES IN EXTREME HYPERVITAMINOSIS.

Our references above to net absorption in hypervitaminosis relate to the primary effect observed, or to the condition of animals receiving *moderate overdoses* of the vitamin. If, on the other hand, *maximal* toxic overdoses are given, and continued for some time, so that the animal begins to lose weight rapidly, and refuses its food, one can no longer obtain evidence of this characteristic increase of net absorption with increased vitamin intake. This is due partly to the loss of appetite, so that little or no calcium is being ingested, but partly also to the breakdown of gut function which is seen in any animal when gravely ill. Partially starved controls on a diet which is normal in composition and restricted only in quantity show a similar failure in percentage net absorption of calcium or phosphate.[15]

Of greater interest, however, was our observation that when the maximal degrees of hypervitaminosis were reached, and no increased provision of calcium was allowed in the diet, there was, especially, marked evidence of resorptive changes in the bone. Fig. 2 illustrates the resorption of compact bone under such circumstances, and shows how spongiosa which had already become abnormally dense under the action of the vitamin D excess begin later to show a band less densely calcified at the growing end. The latter phenomenon, however, may perhaps be correlated with the general cessation of growth (resulting from the severity of the ill-effects) and the corresponding arrest of new bone formation. The conditions of these resorptive changes, we find, are such as to suggest the possible explanation that the bone is called upon as an additional source of calcium for the blood when the alternative available supply in the gut has become exhausted. We have indeed succeeded in showing that as the calcium in the diet is reduced a relatively greater proportion of the extra calcium drawn into the blood does come from the bone. According to this suggested explanation a sufficient increase in the calcium of the diet ought definitely to prevent any decalcification in the bone. An unequivocal demonstration is difficult, however, because while we find that feeding extra calcium in hypervitaminosis does, as anticipated, increase the severity of the hypercalcæmia and the extent of calcification, the animal now succumbs so much more rapidly to these very ill-effects that a direct comparison of the bony changes is not feasible. There is also the secondary loss of appetite, and the consequent absence of the usual source of available absorbable calcium to complicate the direct comparison.

¶ Our early results led us to conclude that toxicity is an intrinsic property of vitamin D itself if fed in sufficient excess; but we did not rule out the possibility that certain by-products could be independently toxic.[3] Recently I have been able to confirm the toxicity of the pure isolated vitamin D (calciferol) and find indeed that its degree of toxicity is of an order sufficient to account entirely for the whole of the toxicity of the crude irradiated ergosterol from which it is obtained. At the same time however I am able to confirm that a preparation can be derived from irradiated ergosterol, as claimed by Holtz, which produces definite toxic symptoms at a relatively much lower level of antirachitic units. The possibility is being examined that the difference in the size of the toxic dose is due to the more ready absorption of the preparation in question, when given in excess.

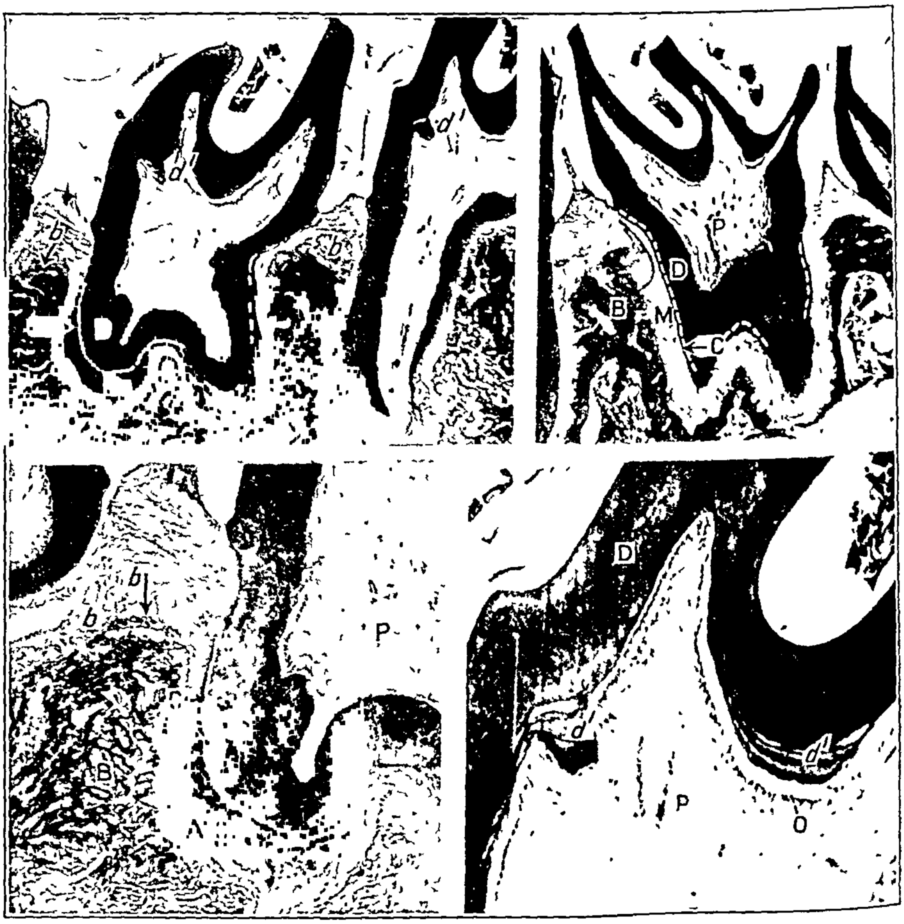
Notwithstanding the undoubted intellectual interest of the observation just discussed, it is essential to bear in mind, as we have previously emphasised,[2] that the primary action of vitamin D, which is of normal physiological importance, and which is equally apparent whether the vitamin is given in suboptimal amounts, in optimal amounts, or in moderate excess, is that described in the earlier paragraphs —viz., increased net absorption of Ca and/or P, raised Ca × P product, and resulting increased calcification.

COMPARISON OF ACTION OF VITAMIN D AND THE PARATHYROID HORMONE.

The knowledge that parathormone, like vitamin D, can bring about a rise in the blood calcium has recently led numerous writers to adopt the view that vitamin D acts simply by direct stimulation of parathyroid function. Noel Paton [21] had earlier supposed nutritional tetany to be in every way identical with parathormone deficiency, and Block and Faber [22] had postulated that irradiation (equivalent of course to vitamin D administration) cured tetany by stimulating the parathyroids. Various arguments are given for supposing that rickets and osteomalacia are due to faulty parathyroid secretion, e.g., Mirvish, 1930.[22a] The beneficial effects of cod-liver oil before parathyroidectomy were attributed by Jones [23] to parathyroid stimulation; and similar conclusions have been given by very many others, including notably Greenwald and Gross,[24] and Taylor, Branion, and Kay.[25] He described an experiment by which he claimed to have proved the connexion.[26] He stated that after the parathyroids had been extirpated vitamin D was no longer able to raise the blood Ca. Further experiments have not confirmed this conclusion, for it has been shown that provided a sufficiently large dose of vitamin D be given its characteristic action can still be demonstrated readily enough.

It is our contention that the available evidence indicates rather that the parathyroid secretion and vitamin D normally function separately and independently, their effect on blood Ca (or P) being only supplementary. The fundamental point of difference between the two, we have urged,[2] is that whereas vitamin D improves the assimilation of food calcium and/or phosphate—i.e., it increases the net absorption—no such action has ever been demonstrated for parathormone, which in contrast raises the calcium in the blood solely by withdrawing it from the bone. What little data have hitherto been published suggest that parathormone has but little effect on net

FIG. 3.



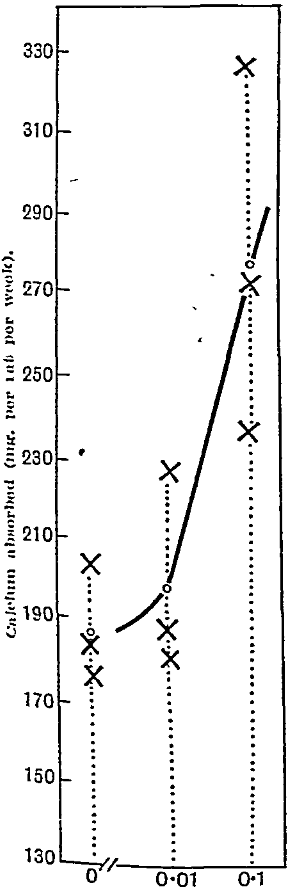
Above.—Sagittal section (×14) of molars of rat suffering from hypervitaminosis (on left); with
n right) (P, pulp; D, dentine; C, cement; M, periodontal membrane;
the overcalcification in hypervitaminosis—e.g., at alveolar crest (b
to the formation of extensive cementoid overgrowth (C,) ankylosed
to the alveolar bone (some resorption in latter). Formation of abnormally large new deposits of dentine (*d*).

Below.—Portions of hypervitaminous tooth, further enlarged, to show: (on left) overcalcification, and new cementoid growth; and (on right) new dentine (lettering as above).

Sections kindly prepared and photographed by Dr. E. W. Fish.

bsorption of Ca and P, and if anything it tends to *liminish* it rather than increase it (see Greenwald and Gross[27]). Whereas the characteristic action of vitamin D in therapeutic doses or moderate excess s to increase the "retention" of Ca and/or P by the body as a whole, the only effect of the kind which has been demonstrated for parathormone is, on the contrary, a *loss* of Ca to the body as a whole owing to the increased urinary excretion. Quite consistently, the literature will be found to indicate always the same distinctive features for parathyroid action, no matter whether the data are derived from instances of hyperparathyroidism, from parathyroidectomy or insufficiency, or from parathormone administration—viz., resorption of mineral matter from bone, raised blood calcium and increased Ca excretion by kidney, with resulting loss of Ca to the body. In short, it seems unwarranted to suppose that vitamin D acts solely by stimulating the parathyroid until evidence can be produced to show that parathormone can bring about the increased net absorption so characteristic of vitamin D.**

FIG. 4.



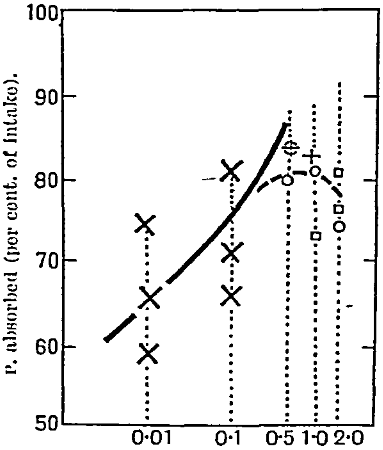
Irradiated ergosterol fed (mg. per rat per day).

Increasing net absorption of Ca with increasing intake of vitamin D (up to 5000 times the minimum effective dose). Circles and curve represent mean values. (From Brown and Shohl's figures.[16a])

Further experiments on these questions are still in progress in this laboratory, including more especially an examination of the effects of relatively small doses of parathormone in comparison with vitamin D upon normal and rachitic animals of various species. The results thus far are in keeping with the conclusions just given. It must be borne in mind that most past work on parathyroid function has been carried out on adult animals, sometimes on Ca-free diets, and principally with very large overdoses of the hormone. The conditions therefore have not been comparable with those employed in investigations on vitamin D action. and accordingly the influence of smaller doses of parathormone, and upon growing and vitamin-deficient animals, is now being examined in detail.

If we accept as correct the view of parathormone action outlined above, we need have no difficulty in accounting for the various observations which have been taken by other authors to indicate that vitamin D stimulates the parathyroid. Since, as we suppose, vitamin D and the parathyroid hormone both tend to raise the blood Ca, although in different ways, it follows that they will appear to augment each other, and hence any excess or deficiency of the one will influence the effect of an excess or deficiency of the other. But it is surely fallacious to argue that such evidence provides direct proof of an interaction between the two. Again it has been shown that parathormone injections have a more pronounced effect when large amounts of calcium are fed simultaneously; but the explanation here, it seems clear, is simply that the ingestion of extra calcium in the diet always tends to raise the blood figure (at least temporarily), so that the separate action of parathormone in

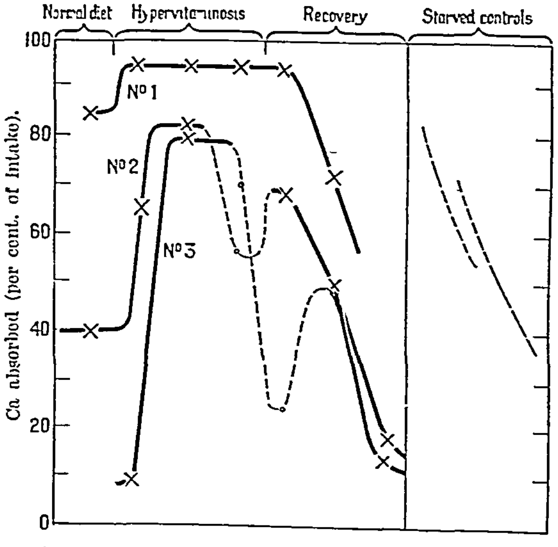
FIG. 5.



Irradiated ergosterol (mg. per rat per day).

Increasing net absorption of P with increasing excess of vitamin D complicated at the maximal levels of excess by the severe illness produced, which gives rise to loss of appetite and final failure in gut function (dotted line) (+, o, □, = cases showing loss of appetite, in increasing order of severity). (Harris and Innes[2] calculated from data of Brown and Shohl).

FIG. 6.



Net absorption of Ca measured during the course of a hypervitaminosis experiment on rats; showing the sharp rise in absorption as soon as the vitamin excess is first administered and great drop in absorption when the excess is discontinued. A secondary effect is seen in the case of rats Nos. 2 and 3 which had become gravely ill in the later stages of the hypervitaminosis, with loss of appetite and failure in gut absorption (dotted lines). A similar failure in absorption is seen in controls partly starved on a normal diet (on right) (from Watchorn's data).

** Our theory leads to the deduction that if parathormone excess induces hypercalcæmia by withdrawal of mineral from the bony reserves, this same hypercalcæmia should in turn tend to promote calcification in those regions of the bone which are more abundantly provided with phosphatase. This is in keeping with the observation that osteoid tissue may be well calcified in hyperparathyroidism.

the same direction is bound to be intensified; it would be illogical to suppose (as has been done) that this experimental result proves that parathormone increases the utilisation of food calcium.

We have mentioned above that very large doses of vitamin D tend to cause an undue density of calcification of the spongiosa in newly forming bone, while when maximal toxic doses are reached, more especially with diets not too rich in calcium, secondary resorptive changes in the over-calcified bone appear, accompanying the general growth failure, the loss of appetite, and the breakdown of gut function, &c. This secondary effect upon the bone clearly bears some resemblance to parathormone action, and a possible explanation is that the over-calcification in the bone calls for the appropriate compensating action on the part of the hormone. Taylor, Weld, Branion, and Kay,[28] who have recently independently drawn attention to the existence of resorptive bone changes in hypervitaminosis, consider, however, that it is more probable that the vitamin D is acting directly upon the gland. In support of their view they bring forward the interesting point that the relative susceptibility of different species to parathormone varies in the same manner as the ease with which they become poisoned by overdoses of vitamin D. However, before one can accept definitely the view that the action of vitamin D excess is due purely to increased parathyroid action, it will be necessary to explain certain suggestive differences between the lesions in the bone in hypervitaminosis and hyperparathyroidism. And again the occurrence, in common, of such abnormalities as calcareous deposits in soft tissues and high urinary calcium, which is also used as an argument for the supposed identity of hyperparathyroidism and hypervitaminosis,[28] could be accounted for as readily at least, we would suggest, by regarding them as a necessary feature of the hypercalcæmia per se, brought on independently by the two disorders.

REMARKS ON THE CLINICAL USE OF PARATHORMONE.

In infantile (nutritional) tetany, osteomalacia, and juvenile rickets, as well as in rickets proper, the fundamental underlying error is the inadequate net absorption of Ca and/or P, resulting in an inadequate retention of Ca and/or P by the body as a whole. The logical therapeutic or prophylactic measure is the administration of vitamin D to correct that error. It may be conceded that as an emergency measure in tetany the use of parathormone is admissible, to bring about a rapid cure of the hypocalcæmia; but its continued use, in any of the above-mentioned conditions at least, is, we wish to suggest, to be deprecated, since it tends merely to aggravate the underlying error by diminishing still further the inadequate retention of calcium and withdrawing still more mineral from the impoverished bone. That parathormone has proved invaluable after parathyroidectomy of course needs no emphasising, but unfortunately there appears to be a tendency in some quarters to prescribe it, rather than vitamin D, whenever a calcium deficiency is suspected, and in fact certain parathyroid preparations are still advocated for rickets, nutritional tetany, and "disorders of calcium metabolism" generally.††

Clinical Hypervitaminosis.

The value of irradiated ergosterol has been so fully demonstrated in clinical practice that one wishes to say nothing that might have the altogether undesired effect of discouraging its use. According to the records of a host of observers in all parts of the world—e.g., Wilkes,[30] May,[31] J. H. Hess,[32] and Alfred Hess,[33] and their respective co-workers in America, Aiden,[34] Cowell,[35] and others in England, Wiskott,[36] Aengenendt,[37] and many others in Germany, Schippers[38] in Holland, &c.—irradiated ergosterol has proved itself literally an infallible specific in the prevention or cure of rickets, if given in adequate doses. A main advantage is that it can readily be administered at much higher levels of vitamin D activity than is possible with cod-liver oil; it is well known that the latter may occasionally prove barely adequate for complete protection, particularly so with twins and premature infants. The practical significance of these considerations is seen to be very great; one has only to recall that, according to recent official *statistics,[39] close on 87 per cent. of London* elementary school-children gave evidence of having had "some degree of rickets," and that to-day "no child need have rickets." We wish then only to draw attention to the point that the human "optimum therapeutic dose" appears to be not far removed from the toxic overdose, and therefore that it is advisable to adhere closely to the correct dosage. We have been subject to some misquotation in this connexion. It is correct to say that we found the toxic overdose for the ra to be no less than 100,000 times the minimal effectiv dose, but from the outset we made it clear that th toxic overdose varied in different species, being fo the human, according to the clinical evidence then available, not far removed from the optimal thera peutic dose (not the same, be it noted also, as th minimal dose).[40 41] We suggested that our experi mental results "should not in any way discourage th rational use of the properly standardised material a the ascertainable correct physiological level," but w by no means excluded the possibility of hyper vitaminosis in humans if such precautions were no taken, and indeed we emphasised the necessity fo further standardisation.[42 40] In a later publicatio we have drawn attention to more recent clinica literature which we believe definitely indicates tha the ill-effects produced in man by overdoses o irradiated ergosterol correspond in detail with thos seen in experimental animals. The clinical instanc in question are given below to illustrate (1) th proximity of optimal dose to toxic overdose, an (2) the identity of the clinical symptoms of exce with those produced experimentally in hype vitaminosis.

A satisfactory prophylactic dose, judging from th clinical data of György,[43] Hess, Lewis, and Rivkin, Sobel and Claman,[45] and others is 0·5 mg. of irrad ated ergosterol, or more precisely expressed abou 5000 units of vitamin D (equivalent to about seve teaspoonfuls of cod-liver oil). It is probable tha the dosage at first recommended tends to be on th low side: thus Alfred Hess advocated a standar dose of 10 drops per day of "100 D"‡‡ for the fir year of life, but later it was found advisable t increase the dose to about 20 or even 30 drops.[32] At the higher level no single case of rickets appeare (see Table).

For curative treatment J. H. Hess,[32] after con siderable clinical experience, advocated a dosage o

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†† A clinical trial of parathyroid extracts in six cases of rickets, two of them with tetany, by Hong and his collaborators,[29] resulted in the rather unsatisfying conclusion that "the reaction of individual patients . . . varies tremendously" and that "the influence of the extracts on the balance of calcium was not found to be uniformly unfavourable." An examination of their figures for the fæcal calcium, however, lends support to the contention that parathormone has either an adverse or else negligible effect on the net absorption.

‡‡ Official American preparation with 100 times the ant. rachitic activity of "good cod-liver oil."

0 to 15 drops per day of 100 D for mild rickets and 0 drops for severe rickets; no ill-effects suggestive of overdose were seen after 6 to 8 months' administration at this and higher levels. (Hypervitaminosis seems less liable to result in therapeutic than prophylactic treatment.) György, of Heidelberg, at first recommended 2 to 3 mg. of irradiated ergosterol for severe cases of rickets; later, after further clinical experience, the dose was reduced to 1 mg. per day (György [42]). Sobel and Claman [43] suggest as optimal therapeutic doses: for children under 1 year of age, 1 to 2 mg. per day, in divided doses; for children over 1 year, 3 to 4 mg. Hess, Lewis, and Rivkin [44] found 1 mg. to be the adequate dose for an average case of rickets.

Table showing Relative Value of Various Antirachitic Prophylactic Measures, from Data of J. H. Hess, Poncher, Dale, and Klein.[32]

No. of infants.	Treatment.	Result after 5–8 months' treatment.	
		Cases of severe rickets.	Cases of "slight" rickets.
63	Viosterol 100 D, 10–20 drops per day	0	0
6	Viosterol 100 D, 10 drops or less per day..	0	6
44	Cod-liver oil, 1–3 teaspoons to 2 tablespoons per day.. ..	2	4
34	Controls, no treatment ..	9	10

Giving 2·5 to 5 mg. of irradiated ergosterol the last-mentioned authors encountered what appear to constitute the first recorded cases of clinical hypervitaminosis. The abnormalities observed included: three cases of hyperphosphatæmia (without apparent ill-effects), several cases of excessively calcified bone and of hypercalcæmia, two of the latter manifesting untoward clinical disturbances. György at Heidelberg relates a similar experience using doses around 4 mg. of irradiated ergosterol. A single case of calcification in the kidney with fatal termination, apparently due to hypervitaminosis, was seen by Putscher (1929 [47]); three instances of renal lesions after vigantol (Klaussner-Crohein, 1930 [48]); renal damage after three teaspoonfuls of vigantol taken in error during one day (Tu-Tungi, 1931 [49]); raised blood Ca or P in normal children or adults given 5 to 10 mg. (Hughes et al., 1929 [50]; Lasch. 1928 [51]; Ghirardi, 1929 [52]); and loss of Ca by way of the urine in normal children given very large overdoses (Hottinger, 1929 [53]). A recent fatal case is that recorded by Thatcher [54] at Edinburgh, who described typical calcareous deposits in the kidney.

In the foregoing clinical instances we see all the most characteristic signs of experimental hypervitaminosis, including the hypercalcæmia and/or hyperphosphatæmia, the overcalcified bone, the excessive urinary excretion of Ca and/or P (with renal damage), first described in this laboratory. In conclusion one may note, perhaps not without relief, that (as also in experimental animals) the ill-effects disappear rapidly, leaving no permanent injury if the excess of irradiated ergosterol is discontinued with no undue delay. From a practical standpoint hypervitaminosis D is almost impossible of production on natural foodstuffs, all of which in comparison are relatively inert. (As many as 14 teaspoonfuls of cod-liver oil per infant per day would be needed to give the same approximate antirachitic potency as the therapeutic optimum of 1 mg. of irradiated ergosterol.) Cod-liver oil in very large excess can, it is true, give rise in experimental animals to certain ill-effects of its own, which are quite distinct from those of hypervitaminosis D (Harris and Moore,[42] [55] Norris and Church [56]); and it has been suggested that infants can suffer in the same way (Agduhr [57]). Recently we have discovered that if cod-liver oil be oxidised by aeration such toxicity is vastly increased (Harris [58]).

Summary.

1. Investigations on hypervitaminosis have substantiated the theory that the characteristic mode of action of vitamin D is to permit an increased "net absorption"[‖] of Ca and/or phosphate from the gut, tending to raise the level of the blood calcium and/or phosphate: the latter rise automatically brings about increased calcification in sites provided with the "bone," or "calcifying" enzyme, phosphatase. This action is apparent whether the vitamin is fed in suboptimal amounts, in doses approaching the optimum, or in moderate excess. Hypervitaminosis thus stands in logical contrast with rickets (hypo- or a-vitaminosis). In the latter there is deficient net absorption of calcium and/or phosphate, hence hypocalcæmia and/or hypophosphatæmia, and resulting insufficient calcification; while in hypervitaminosis there is a potential increase in net absorption, hypercalcæmia and/or hyperphosphatæmia, and excessive calcification in sites such as the growing end of the bone, in teeth, &c., and also in certain soft tissues such as the kidney and aorta, which are also richly provided with the "bone" enzyme.

2. The foregoing theory of vitamin D action permits a ready explanation of the following: the variation between species, in measures needed to induce rickets—e.g., rat compared with dog or human: the ætiology of experimental nutritional tetany compared with low-phosphate rickets; the influence in hyper- and hypo-vitaminosis of the Ca intake, Ca—P ratio, &c.

3. Like vitamin D the parathyroid hormone can also raise the level of the blood Ca, but the available evidence suggests that it does so solely by draining the mineral matter from the bone, and there are no records of increased net absorption from the gut. Until evidence is offered of the latter characteristic action, the theory cannot be accepted that vitamin D acts normally by simple stimulation of the parathyroid. Parathormone has been shown by past workers to bring about a loss of calcium to the body owing to the increased urinary excretion; the vitamin, on the other hand, in amounts up to moderate overdoses, tends to augment "retention" (the potential increase in net absorption exceeding any increase in urinary excretion). It is suggested that such symptoms as the increased urinary excretion and calcareous deposition common to both hypervitaminosis and hyperparathyroidism do not necessarily indicate stimulation of parathyroids by vitamin D excess, but may be attributed to the hypercalcæmia and/or hyperphosphatæmia to which both conditions independently give rise.

4. The indiscriminate use of parathormone clinically for cases of suspected calcium deficiency is to be deprecated, most definitely in such conditions as

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[‖] An increase in "net absorption" implies an *increase* in the gross amount absorbed from the gut or a *decrease* in the amount excreted back into the gut—i.e., of material previously absorbed.

infantile tetany, osteomalacia, late rickets, &c.; for although it will succeed in raising a low blood calcium, it merely aggravates the underlying metabolic error (inadequate retention of Ca and/or P), causing loss of minerals to the body, and still further depleting the already impoverished bones. Vitamin D, on the contrary, rectifies hypocalcæmia (or hypophosphatæmia) by ensuring an adequate utilisation of the food Ca (and/or P).

5. Complicating secondary effects occur in experimental hypervitaminosis when the maximal levels of toxicity are reached and have led to some misunderstanding. Loss of appetite and failure in gut function results in little calcium being absorbed (the absorption fails equally in partially starved controls having no excess of vitamin D), and since urinary excretion remains high the retention by the animal as a whole now tends to drop. Again, if maximal toxic doses of vitamin D are given, under these circumstances and particularly if the calcium intake is not correspondingly increased, secondary resorptive changes are seen in the bones, which can therefore provide an alternative source of some of the extra Ca drawn into the blood.

6. The ill-effects in hypervitaminosis are the same in man as in experimental animals. Clinical experience shows that for the human the toxic overdose of irradiated ergosterol is not far removed from the optimal (not "minimal") curative dose. The correct dosage should therefore be strictly adhered to.

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THE TREATMENT OF

INFECTIONS OF THE URINARY TRACT BY A KETOGENIC DIET.

BY PROF. HUGH CABOT, C.M.G., M.D., F.A.C.S.,
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ROCHESTER, MINN.

IN October, 1931, Dr. H. F. Helmholz and Dr. A. L. Clark presented to the staff of the Mayo Clinic the results of work which they had been doing quite independently on the effects of a ketogenic diet upon infections of the urinary tract.[1] Dr. Helmholz, working entirely with children, had been attracted to this study by the observation that the urine of children under treatment by a ketogenic diet for epilepsy was extraordinarily resistant to putrefaction. Dr. Clark undertook his investigations on account of the observations made by W. M. Clark[2] in 1915, which appeared to show that colon bacilli are inhibited from growing in urine at a pH of 4·6 to 5·0 on the acid side, and 9·2 to 9·6 on the alkaline side. It is interesting to note that each of these two observers carried out his experiments without the knowledge that the other was also working on the problem. Dr. Helmholz had previously studied the effect of acidification of the urine by means of ammonium and calcium chloride, producing a reaction with a pH of about 5·0, and had observed that this measure would accomplish the sterilisation of the urine in some cases but not in others. His experience, in common with that of many other observers, had been to the effect that while it was generally possible to sterilise the urine of children by the use of drugs in the absence of obstructive lesions, in the presence of such lesions—for instance, various types of hydronephrosis—sterilisation could not be obtained. He had in his care a child of 8 with a chronic infection of the urinary tract and marked hydronephrosis on the left side; he found that it was impossible to sterilise the urine by the use of various drugs, including ammonium chloride. When a ketogenic diet, producing an acidity of 5·5, was given, sterilisation of the urine was obtained. He also observed on this patient that after the diet had been discontinued and the urine returned to an acidity of only 6·4, it nevertheless remained sterile.

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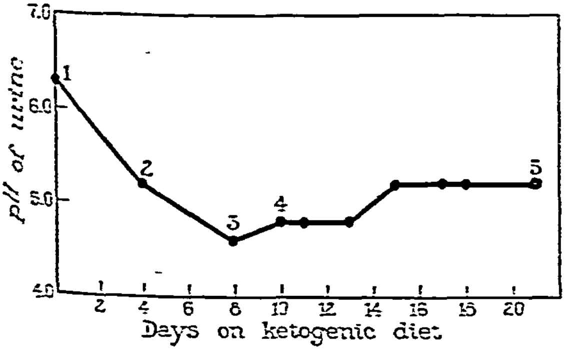
[1] Proc. Staff Meetings, Mayo Clinic, 1931, vi., 605, 609.
[2] Jour. Biol. Chem., 1915, xxii., 87, 98.

His next trial of the method was made upon a child of 9, who was known to have had a chronic urinary tract infection for three years, accompanied by recurrent attacks of fever and renal pain. Examination showed an albuminuria of grade 2 and a pyuria of grade 4 (these grades being on a scale of 4). Cultures from the bladder and ureters showed innumerable colonies of *Streptococcus hæmolyticus*. Further examination disclosed a diffused cystitis, bilateral pyelonephritis, bilateral hydronephrosis and hydro-ureter, with probable duplication of the ureter on the left side. This patient reacted in a manner similar to that of the other: by treatment with drugs it was not possible to sterilise the urine, but on the third day after the commencement of a ketogenic diet, with an acidity of 5·8, the urine was sterile. These observations have been followed by others giving similar results.

Dr. Clark, on the other hand, was working only with adult patients, and had been striving with the usual unsatisfactory results to sterilise the urine by the use of drugs. His first observation was made upon a man of 54 whom he first observed in May, 1931.

For the previous 18 months the patient had been suffering from burning on urination, with frequency, urgency, perineal discomfort, and serious nocturia. Careful examination revealed the presence of bilateral pyelonephritis and chronic prostatitis. There was no obstruction at the bladder neck. Careful treatment by the usual methods of bladder irrigation, prostatic massage, and the administration of urinary antiseptics failed to improve the situation. Urine cultures showed many colon bacilli. The urine was cloudy to hazy, and contained shreds. On July 21st he was put upon a quantitative ketogenic diet. On July 25th the urine was clear and showed an acidity of 5·2. The symptoms were also markedly improved. On July 29th both glasses of urine remained clear: the acidity was 4·5 and the urine was sterile to culture. By this time irritation, frequency, and nocturia had disappeared. Fig. 1 shows the reaction of the urine in this case under treatment. On August 10th the patient was dismissed from the clinic and advised to continue a qualitative ketogenic diet at home. On August 24th he was re-examined: the urine was found to have remained clear and sterile, and showed a reaction of 4·8.

FIG. 1.



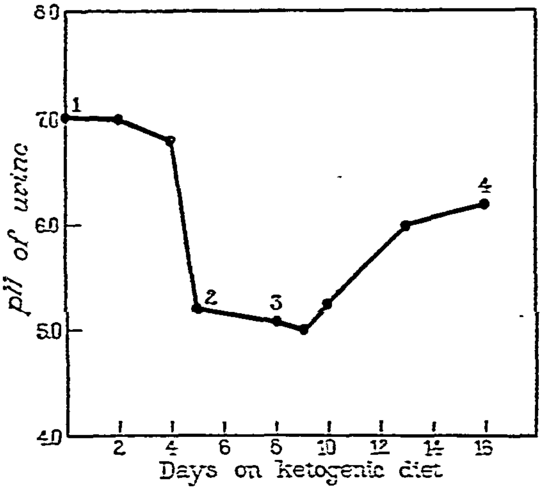
Case 1.—Features corresponding with the numerals on the graph are as follows: 1, both glasses of urine in the two glass test cloudy, urination at night three to four times, frequency and urgency, many bacilli in sediment; 2, symptoms improved, glass 1 slight haze, glass 2 clear; 3, no frequency, no nocturia, occasional bacilli in sediment, urine clear; 4 and 5 no growth on culture.

A second case was that of a man of 63, who came under observation on August 11th, 1931.

In the previous May he had developed serious nocturia, with urgency and perineal discomfort. From May 1st to August 1st various drugs and methods of local treatment had been tried but without benefit. The urine showed a very free growth of colon bacilli. On August 24th the patient was given a ketogenic diet; the reaction of the urine is shown in Fig. 2. On August 29th the urine was clear; cultures were free from colon bacilli but yielded a few colonies of *Aerobacter aerogenes*. On Sept. 1st the urine was entirely sterile, and remained so during the next ten days.

These cases under the care of Helmholz and Clark appeared to point to a very important effect produced upon urinary tract infections through increasing the acidity of the urine by a ketogenic diet. They served to stimulate our interest in this method of treatment, and have been followed by a number of further observations with similar results. It will be noted that the effect upon the bacteria in the urine is not produced simply by the acidity; neither Helmholz nor Clark, working respectively with children and with adults and producing an acidity of about 5 by means of drugs, could sterilise the urine. On the other hand, an acidity of even lesser amount produced by a ketogenic diet was promptly effective. It appears, therefore, to follow that the acidity produced by diet has a very much more powerful sterilising effect than that produced by drugs. There is at least a strong suggestion that a ketogenic diet, operating not only through the urine, but—quite obviously—through the blood stream, will produce an effect upon the cells themselves, and will act at a much deeper level than where dependence is placed upon the contact of an acid urine with the superficial tissues.

FIG. 2.



Case 2.—Features corresponding with the numerals on the graph are as follows: 1, urine cloudy, urination at night two to three times, frequency, urgency, dysuria; 2, urine clear, Escherichia coli in culture, symptoms greatly relieved; 3, no growth on culture; and 4, still no growth on culture although pH was up to 6·2, no nocturia, frequency, or urgency.

It is practically interesting to consider what apparently objectionable effects this treatment may have. We have all in the past been familiar with the serious conditions found in children in the presence of marked ketosis, resulting either from starvation alone or from starvation associated with disease. There is at least a strong suggestion that the ketosis intentionally produced by diet is in some respects different from that seen in disease, and that the classical picture of ketosis does not result; further, that the bodies producing this reaction in the urine may not be precisely similar when liberated by these two different methods. Consequently, much further work in the chemistry of the urine under these conditions is indicated.

infantile tetany, osteomalacia, late rickets, &c.; for although it will succeed in raising a low blood calcium, it merely aggravates the underlying metabolic error (inadequate retention of Ca and/or P), causing loss of minerals to the body, and still further depleting the already impoverished bones. Vitamin D, on the contrary, rectifies hypocalcæmia (or hypophosphatæmia) by ensuring an adequate utilisation of the food Ca (and/or P).

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140, and his respiration-rate 25 per minute. Examination of the central nervous system revealed bilateral ptosis, but no squint or other affection of the cranial nerves. Neck rigidity was fairly marked and Kernig's sign was positive on both sides of the body. The knee-jerks were both brisk and the plantar responses doubtfully flexor in type. No abnormalities were present in the chest or abdomen. The urine was normal. The ear-drums were normal on both sides

Lumbar puncture revealed turbid cerebro-spinal fluid under increased pressure. On analysis it showed: cells, 1000 per c.mm., 75 per cent. polymorphonuclear in type; chlorides, 672 mg. per cent.; protein present in large quantity; sugar much reduced in quantity (the fluid had, however, been standing for 12 hours). On culture a Gram-negative bacillus was isolated.

The child became more and more comatose and emaciation became marked. The rigidity of the neck and limbs steadily increased until death, which took place nine days after admission. During this time his temperature swung from 97° to 99·6° F., rising above this only for a few hours before death. The pulse-rate remained constantly between 140 and 160 until the day before death, when it dropped to 108; on the day of decease it rose rapidly and became uncountable. The respiration-rate was 30–40 during the whole period. The bowels were constipated and enemata were required for their relief on occasion.

Lumbar puncture was performed daily. For the first six days after admission the fluid was turbid and under increased pressure. From this time until death it became so thick as to flow through the needle only in small amount and very slowly. Four days before death he developed a severe conjunctivitis, and in the evening he had a convulsion. From this time until his end he became more rigid and opisthotonic. The cerebro-spinal fluid was by now very thick and obtained in too small quantity to permit analysis. He died on July 5th, nine days after admission. No autopsy was allowed.

CASE 2.—A boy of 8, sent in by Dr. C. W. Coulter, was admitted on July 4th, 1931, with a history that two days before he had been seized with severe headache and vomiting. That night he had been delirious, and on the following day the headache and vomiting had continued. He was again delirious at night, but the following day, the day of his admission, he had stopped vomiting, though the headache had continued. He had also developed some pain in the right side. His bowels had been opened each day with a normal result.

On admission he was flushed, feverish, and irritable, the temperature was 102·8° F., the pulse-rate 120, and the respiration-rate 40. The tongue was furred, and there was slight stiffness of the neck and legs, but no other abnormality of the central nervous system. No abnormality was found in the cardiovascular system or abdomen, but there was a slight bronchitis. No rash was present; the ear-drums were both normal. Lumbar puncture was performed, the fluid obtained being clear and under increased pressure. The urine was normal. A provisional diagnosis of typhoid fever was made and a blood culture immediately performed, which yielded a Gram-negative bacillus.

On the day after admission his condition was unchanged; he had been slightly delirious over-night, but was now rational. The spleen was just palpable; it had not been felt on admission. His temperature had dropped to 100° F., and his pulse-rate to 90. On the following day he had improved markedly. His temperature was normal, his pulse-rate 88, and, beyond a slight cough, he was comfortable. From this point his recovery was rapid; the spleen was not again felt, the cough improved, and the last signs to go were the slight rigidity of the neck and legs. His bowels were very constipated, and for over a fortnight he required enemata to obtain an evacuation. His pulse-rate and temperature remained normal, and he was discharged cured on July 24th, 20 days after admission. His treatment for the first four days, until the diagnosis was finally established, was that usually prescribed for typhoid fever. After this a light varied diet was given, no other therapeutic measures being employed.

PATHOLOGY.

The cytological examination of the cerebro-spinal fluid from Case 1 showed a very high content of polymorphonuclear cells, indicating a septic type of meningitis. In the first specimen of cerebro-spinal fluid withdrawn dried smears revealed a Gram-negative bacillus of coliform appearance present in small numbers. Some forms were in pairs, but morphologically tended to be diplobacillary rather than diplococcal. Cultures on blood and trypsin-agar were sterile at this stage. Much protein was present in the form of globulin and albumin. The chloride content was very slightly reduced—viz., 672 mg. per 100 c.cm. On June 29th the sugar content was reduced to zero. The accompanying table summarises the changes found in the cerebro-spinal fluid:—

Date in 1931.	Cells.	Polymorphs (per cent.).	Dried smears.	Chlorides (mg. per cent.).	Sugar.	Albumin.	Globulin.	Cultures.
June 27	1000	75	Few G.-n. bac.	672	..	+++	+++	Sterile.
29	..	..	..	622	0	++	+	—
July 1	1330	70	Many G.-n. bac.	669	17	++	+	Blood-agar: sterile. Broth: G.-n. bacillus.
2	..	..	..	657	11	++	+	Blood-agar: coliform colonies. Serum water: G.-n. bacillus.
3	700	90	G.-n. bac.	..	..	..	..	

G.-n. bac. = Gram-negative bacilli.

Subculture of colonies on blood-agar, which at an early stage were more or less "pin-point" in appearance, yielded on MacConkey's medium a pure non-lactose fermenting growth. The fermentation reactions of this organism, which was a Gram-negative motile bacillus, were as follows:—

Lactose ..	Alkaline.	Milk ..	Alkaline.
Glucose ..	Acid and gas.	Gelatin ..	No liquefaction.
Mannite ..	Alkaline.	Indol ..	+
Dulcite ..	,,	Voges-Proskauer	—
Saccharose	,,		

These reactions were unchanged after 12 days, and are characteristic of Morgan's No. 1 bacillus. As agglutinating serum for Morgan's bacillus was not readily available, the organism was submitted to Prof. C. J. Lewis and Dr. Bayliss Ash, of the University of Birmingham, who were kind enough to send the following report:—

> "The organism was compared with our standard Morgan's bacillus No. 1 with regard to cultural characteristics, fermentation reactions, and agglutination against a Morgan antiserum prepared in the laboratory. This organism was agglutinated at a titre of 1–900, and it agrees in all characteristics with our stock Morgan's bacillus."

It should be noted that in this form of meningitis the chloride content was slightly, but definitely, below normal; the average content of the four estimations made was 655 mg. per 100 c.cm. Neale and Esslemont[1] found that 730 mg. was the average amount in children from whom cerebro-spinal fluid was withdrawn but who proved to be non-meningitic, while cases of tuberculous meningitis averaged 613 mg. The sugar content was very definitely diminished, and its behaviour is apparently similar to that in other cases of septic meningitis—e.g., meningococcal and pneumococcal.

In Case 2 a Gram-negative bacillus was isolated from the blood on July 4th. This gave the fermentation reaction characteristic of Morgan's No. 1 bacillus, exactly as in Case 1. The sugars were left for 12 days and showed no change. Prof. Lewis and Dr. Ash kindly tested the organism for agglutination powers and reported: "The organism agrees similarly and is agglutinated by the Morgan antiserum to a titre of 1–1200."

DETAILS OF THE DIET.

The following are details of a qualitative ketogenic diet giving approximately 2500 calories per day :—

Carbohydrate	20 grammes	Protein	70 grammes
Fat	240 grammes		

Food allowance for 1 day.

Butter, 10 squares	$^{1}/_{5}$ lb.
Cream, heavy-whipping	$^{1}/_{2}$ pint
Bacon	4 strips
Eggs	2
Meat	4 oz.

Soya bean muffins, 3. 5 per cent. vegetables, 4 servings; 2 cups, such as spinach, asparagus, tomato, celery, lettuce, and cucumber.

Tea and coffee, sweetened with saccharin.

This diet is probably one which for most patients will be disagreeable, and which for some patients will be impossible to enforce for a period sufficiently long to produce results. The work of Helmholz suggests that the diet will produce a more prompt effect in children than in adults. In the latter group at least seven days was required in 15 of Clark's patients to produce sterility, while in one case as much as 35 days were required to sterilise the urine completely. In yet another case it was impossible to produce an acidity lower than 6, and no sterilising effect was obtained. In three more cases the diet could not be tolerated. There thus appears to be an important personal factor, perhaps more important in the adult than in the child, but it is clear that many further observations upon this point will be required.

CONCLUSIONS.

Clark,[3] in a personal communication in March, 1932, draws the following conclusions :—

1. "The general condition of the patient must be such that he can endure the alteration in his diet. A patient who is able to take a moderate amount of exercise is a far more satisfactory subject for this type of treatment that one who is necessarily confined to bed.

2. "Coöperation of the patient is absolutely necessary. In Cases 2 and 6 the patients were not coöperative, and the results obtained, as judged by the pH of the urine, were correspondingly disappointing.

3. "The patient must be able to digest and assimilate fats. This was very clearly demonstrated in Case 15; the patient apparently was unable to prepare the ingested fats for assimilation. He had undergone resection of the stomach, but whether this fact is relevant to his inability to rid himself of bacilluria cannot be stated.

4. "The normal intake of fluid should be maintained. Increase in the intake of fluids may cause undesirable dilution of ketogenic products.

5. "If the infection is in the upper part of the urinary tract, treatment must be continued for a longer time than if the infection is in the bladder.

6. "The ketogenic diet tends to entail constipation and gastro-intestinal upsets, but a dietitian can forestall these effects."

This brief survey of the work of Helmholz and Clark appears to me to warrant the following tentative conclusions : (*a*) Acidity produced by a ketogenic diet is more effective than an equal acidity produced by drugs. (*b*) Acidity does not cause bladder irritation, as has been assumed in the past; on the contrary, irritation existing in the presence of urinary infection will be relieved by increasing the acidity of the urine at least to the extent that the infection is favourably influenced. (*c*) This method opens up an interesting field for further investigation, and may importantly affect the results of operations upon the urinary tract undertaken in the presence of previous chronic infection. Thus, we have hesitated to operate upon patients with infected hydronephrosis, and when we have done so some of them have shown violent increase of infection with serious consequences. If, as a result of this method of treatment, the infection in these kidneys can be controlled before operation, *then the result of the operation, both as regards risk* and permanency, is likely to be very much improved.

An interesting speculation in which one might indulge is on the effect of such treatment in preparing patients with prostatic obstruction for operation. Undoubtedly the largest single factor in the mortality of such operations, and also in the morbidity which follows successful intervention, is our inability to deal satisfactorily with existing infection. If it should prove possible to diminish or to abolish infection before operation, a very important improvement in our results would accrue. It is just conceivable that we might be able to produce before operation a certain protective mechanism in the tissues themselves which would enable them to withstand the increased chance of infection, whether of the lower or of the upper urinary tract, during the early days after operation. It is precisely here that we have in the past been most helpless, and therefore it is here that we need help.

The method appears to me a very important and interesting one which should be widely investigated, so that the suggestions made on the relatively small series of cases treated by Helmholz and Clark may be affirmed or denied. It is not impossible that a ketogenic diet may be found to act differently on peoples who normally live on widely different diets. Should this prove true, the results of the method might be importantly different in different parts of the world, and the method might thus prove more valuable in certain countries than in others.

MENINGITIS AND SEPTICÆMIA

DUE TO MORGAN'S NO. 1 BACILLUS.

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AND
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Infections of the blood with Morgan's No. 1 bacillus are rare, and infection of the meninges with this organism must be extremely uncommon, since we have not been able to find a reported case. The presence at the same time of two cases in the Birmingham Children's Hospital—one of septicæmia and the other of meningitis—presented an opportunity for their investigation and comparison. These children came from different places, some miles apart, and had at no time been exposed in any way to a common source of infection.

Case 1.—A boy, aged 1½ years, sent in by Dr. F. M. Rowland, of Lichfield, was admitted on June 26th, 1931. He had been well until the 22nd, when he became restless. The following day he was drowsy and irritable; he also developed dirty habits, from which he had previously been free. During the day of June 26th he became worse and cried out without reason.

On admission he was drowsy and very ill. He was flushed, his temperature was 100° F., his pulse-rate was eble the rate of flow, presumably because the orifice as occluded by some adjacent tissue.

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[3] Clark, A. L.: Personal communication, March, 1932.

APPARATUS AND TECHNIQUE.

There are various types of manometer on the arket and probably the best are the simplest which onsist of a glass tube of narrow bore, graduated n centimetres, which can readily be attached to the eedle after withdrawal of the stilette.

The one I use is readily made from a piece of thermometer ubing, some 50 cm. in length, with a bore of 0·5 to 1 mm.; his is bent at a right angle 3 cm. from one end, in the flame f a burner, care being taken by blowing through it meanhile that the lumen does not become occluded; the ent end may either be fused into a metal nozzle that will t the lumbar puncture needle, or else attached to the nozzle y a short length of rubber pressure tubing. In graduating uch a manometer it is necessary to make a correction for apillary attraction since zero does not coincide with the evel of the needle; the lower end of the manometer is laced in a dish containing cerebro-spinal fluid (preferably mixture from several patients) and, with the nozzle ust below the level of the fluid, the latter will be seen to ise up the tube a distance of as much as 5 cm., the height arying according to the diameter of the tube; when the osition of the meniscus is definitely ascertained this point s marked as zero, with a diamond pencil, and the tube raduated upwards from here.

Such a manometer may conveniently be sterilised before se by attaching a rubber teat to the upper end, immersing he lower end in a dish of spirit and drawing the spirit up he tube by compressing the teat; finally the spirit is xpelled in like manner until it is dry.

For the purpose of manometric readings it is necessary that lumbar puncture be performed with the patient lying on his side; in the sitting position, as used by Raynaud, the pressure will be influenced by the length of the patient's back.

When the stilette is withdrawn from the needle and fluid begins to flow, the manometer is immediately attached; it is then essential that the patient's head should be on the same level as his spine and lying in a comfortable position; the legs should be extended slightly and the patient directed to lie perfectly still without straining. This is one of the most important points of the whole procedure and undoubtedly constitutes the largest source of error. One finds in almost every case that the fluid rises to a considerable height at first and only returns to its true level after the lapse of a few minutes; the fall is frequently accelerated if the patient is instructed to take a few long breaths, so as to relax the abdomen. It is well to slope the manometer a few times, thus allowing the fluid to run up nearly to the top, and observe whether it returns constantly to the same level. As a further precaution, lest the needle should be occluded, it is advisable to compress the jugular veins and so elicit the Queckenstedt phenomenon; this last provision has the added advantage of detecting spinal block or, as in one case recently seen by the writer, an unsuspected lateral sinus thrombosis. In infants or young children who cry it is quite useless to attempt to measure the pressure, and the same is true of lunatics or other persons who have to be restrained during the operation; the slightest exertion on the part of the patient is recorded by a rise in the pressure.

RESULTS OF EXAMINATION.

In the cases now to be reported the patients are all syphilitic natives of the Sudan; they include those attending local hospitals and also various native soldiers and prisoners whose bloods were found, on routine examination, to be sero-positive. This work is being done in a study of syphilis among the Sudanese, the results of which will be published at a later date. Complete examinations have now been made of 313 patients in various stages of the disease.

1. *Primary Cases*, with chancre but no secondary signs.—This group comprises 22 individuals, of whom 9 had increased cell counts (over 3 per c.mm. in Fuchs-Rosenthal's chamber) and/or a total protein of over 30 mg. per cent. (by Mestrezat's diaphanometric method). The average pressure in this group was 11 cm. of fluid and the extremes were 2 and 18; the fluid with the highest cell count (35⅓ per c.mm.) and a positive Pandy reaction had a pressure of 11 cm. of fluid.

2. *Secondary or Early Tertiary Cases*, with skin lesions.—There were 55 cases, of which 15 had positive changes in the cerebro-spinal fluid, as defined above. The average pressure was 9·9 cm. of fluid and the extremes 0 and 15. The case with zero pressure had 4⅓ cells per c.mm. and a protein content of 35 mg. per cent.; there can be no doubt as to the validity of this reading as compression of the jugular veins produced an immediate rise in the manometer tube and this fell promptly to the zero mark when pressure was released. Another patient in the group with 38⅓ cells, 50 mg. of protein, and a positive Pandy and +++ Kahn had a pressure of only 2 cm. of fluid; and one with 45 cells, 40 mg. protein and + Kahn had a pressure of 14 cm. of fluid.

3. *Tertiary Cases* with active cutaneous or visceral lesions.—There were 53 cases in this group and 23 had positive fluids. The average pressure was 10·7 cm. of fluid, with extremes of 0 and 26; the one with a pressure of 26 was a case of syphilitic carditis with extreme decompensation and ascites so that here the hypertension may well have been of purely mechanical origin. One with a pressure of 25 cm. was a man with extensive ulceration of the palate and a cerebro-spinal fluid containing 8⅓ cells and 45 mg. per cent. of protein, with + Kahn reaction. The next highest, with a pressure of 18 cm. of fluid, was a case of cirrhosis with ascites and an otherwise normal fluid. The remainder were all 16 cm. of fluid pressure, or less. A solitary case with zero pressure was a man with specific iritis whose fluid contained 40 mg. per cent. of protein and no cells in 3 c.mm. In this group, therefore, we can only cite one case, that with ulceration of the palate, as having hypertension of the cerebro-spinal fluid if we accept as our upper limit of normality a pressure of 20 cm. of fluid.

4. *Congenital Lesions.*—In only six cases in this group was it possible to take an accurate manometric reading; of these four had positive fluids. Only one, a boy with a criminal record, scarring of the tibiæ from old gummata and exaggerated tendon reflexes, had a pressure of 22 cm. of fluid; he had a protein of 45 mg. per cent. and 1⅓ cells. The remainder had pressures between 7 and 15; one, with a cell count of 168 per c.mm., protein 50 mg. per cent. Pandy +, Kahn +++ and a weak luetic Lange gold curve, had a pressure of 10 cm. of fluid.

5. *Latent Tertiary*, with no apparent lesions clinically.—Of 157 in this group 28 had positive fluids. The average pressure was 10 cm. of fluid and the extremes were 0 and 22. The one case with the pressure of 22 had Kahn + in his fluid but no other abnormality; this was the only one above 18. A patient with 424 cells, of which 4 per cent. were plasma cells and 1 per cent. polymorphonuclears, a protein of 60 mg. per cent., Pandy ++, Kahn +++ and a luetic gold curve, had a pressure of 15 cm. of fluid, and two others with 323 and 184 cells and other findings parallel had pressures of 11 and 12 cm. respectively. Two cases with zero pressure had normal fluids.

6. *Neurosyphilis and Retinitis.*—Twenty cases, with positive fluid in 13. This group had an average pressure of 11 cm. of fluid and extremes of 0 and 31. The group included the following: hemiplegia of probable syphilitic origin, 3 cases; cranial nerve palsies, 2; hemiplegic Jacksonian epilepsy, 1; choroiditis, 3; optic atrophy, 2; retrobulbar neuritis, 1; thrombosis of retinal artery, 1; transverse myelitis, 1; neuro-recurrence, with meningeal signs, 2; chronic syphilitic meningitis, 1; peripheral neuritis, 2; and one case with a history of maniacal outbursts, a positive fluid, but no sign of G.P.I. One of the neuro-recurrences had 1856 cells per c.mm., a protein content of 240 mg. per cent., positive Kahn, globulin and gold reactions, and a pressure of 31 cm. of fluid; this was the only one with a pressure over 16 cm. of fluid; the other neuro-recurrence, of lesser magnitude with 94 cells, had a pressure of 9 cm. of fluid.

DISCUSSION AND SUMMARY.

There is a lamentable lack of information in the literature about the actual degree of pressure that may be considered normal. Some of the authors whose figures are quoted at the beginning of this paper considered 20 cm. of fluid as the upper limit of normal, An anomalous feature of this case was the isolation, from the cerebro-spinal fluid on July 4th, of a Gram-negative bacillus in broth, which, on subculture on MacConkey's medium, yielded lactose-fermenting colonies. As this fluid when taken on admission showed no cytological changes suggestive of meningitis, and as the nature of the illness (later proved to be a Morgan's septicæmia) was not then appreciated, this organism of apparently coliform type was regarded as an inadvertent contamination and was not further investigated. In the light of the subsequent results of subculture of the organism from the blood, it is possible, if not probable, that an error of observation regarding the lactose-fermenting capacity of the cerebro-spinal fluid organism was made, and that this too was in fact Morgan's No. 1 bacillus. It is interesting to note that on the fifteenth day of the illness the serum did not agglutinate the Morgan's No. 1 bacillus isolated; this contrasts with typhoid infections, in which a positive Widal test may be expected any time after the seventh day. As the child recovered, no further pathological investigations were made.

DISCUSSION.

We have not been able to trace any definite record of meningitis caused by Morgan's No. 1 bacillus. Cases of septicæmia are known to occur. Dick and Williams [2] have reported on an epidemic which was attributed on rather doubtful grounds to Morgan's bacillus. One case, on which no bacteriological examination was made, developed meningitis. Symmers and Wilson [3] report three cases of meningitis due to anthrax, typhoid, and Gaertner's bacillus. The last occurred in a child 4 months old, with an onset of vomiting and diarrhœa, and later typical signs of meningitis. Twice during life and at post-mortem examination they cultivated from the cerebro-spinal fluid an organism proving, by fermentation and agglutination absorption experiments, to be the bacillus of Gaertner. The intestine showed no inflammation; the Peyer's patches were not swollen; the brain showed a fibrinous exudate at the base. Kortenhaus records septicæmia, caused by Morgan's bacillus, and other cases of septicæmia with meningitis by allied organisms as the ætiological agents have been reported—e.g., by Friedländer's bacillus,[4] by *B. acid. lact.* (in the new-born),[5] by the colon bacillus (Navarro [6] and Bardisian [7]), and by *B. paratyphosus* B (Anderson,[8] Brahdy [9]).

Both these cases were under the care of Prof. L. G. Parsons, who has kindly allowed us to report them, and to him we are very grateful. We would also thank Prof. Lewis and Dr. Ash for their kindness in reporting upon the organisms in both cases.

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QUEEN'S HOSPITAL FOR CHILDREN.—At the annual meeting last week the Duke of York, the president, announced that a fund is to be raised for building a new out-patient department to commemorate the generosity of the late Lady Cooper, vice-president, and to be named after her.

CEREBRO-SPINAL FLUID PRESSURES IN SYPHILIS.

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It is generally stated in the text-books that one of the commonest and earliest signs of a pathological condition of the cerebro-spinal fluid in syphilis is an increased pressure; indeed, one seldom sees a report on a cerebro-spinal fluid examination in which it is not remarked that the tension was somewhat raised. Very often these observations are based upon a rough estimate of the number of drops which flow from the needle in a minute and, even where a manometer is used, there is such a lack of uniformity of technique that probably very few of the records can be accepted without question. The purpose of this paper is to give an account of the figures reported in the literature, to discuss the technique of manometry, and finally, to publish the results of observations upon the pressures obtaining in a series of some 300 cases of syphilis, in all stages of the disease.

The results of previous investigators may be shown conveniently in tabular form; it should be mentioned that these are the figures obtained by routine examinations of syphilitics in all stages of the disease without clinical signs of neurological abnormality.

Author.	Stage of disease.	Cases.	Percentage with hypertension.	Remarks.
Raynaud et al.[1]	Primary and secondary.	38	36	With Claude's manometer in sitting position.
	Tertiary.	24	37	—
Raynaud et al.[2]	Primary and secondary.	152	38·1	—
	Tertiary.	120	40	
Fleischmann [3]	Primary sero-negative.	27	51·8	Only 37·1 per cent. had pleocytosis.
	Primary sero-positive.	39	48·6	Pleocytosis in 33 per cent.
	Secondary.	135	68·8	Pleocytosis in 50·4 per cent.
	Tertiary.	31	87·5	Pleocytosis in 50 per cent.
Ravaut [3] ..	Secondary.	33	42	Pleocytosis in 88 per cent.
Werther [3] ..	,,	?	82	Pleocytosis in 48 per cent.
Eskuchen [3] ..	,,	?	60–85	—

According to Dujardin,[4] pleocytosis in the primary or secondary stage of the disease is always accompanied, and sometimes preceded, by increase of fluid pressure; and Greenfield and Carmichael [5] state that increase of cells in the fluid in tertiary syphilis is usually associated with an increase of pressure.

It will be seen shortly that the above figures are very greatly at variance from those now reported and I believe that the difference may be explained by a consideration of the many sources of error that present themselves. It will be readily admitted that the favourite bedside method of counting the number of drops that flow from the needle is apt to be grossly inaccurate; one frequently finds, when collecting fluid for examination, that a slight rotation of the needle about its long axis will immediately

Fourteen days later the temperature rose to 102° F., and ain quite suddenly appeared similar swellings in the bcutaneous tissues, one in the region of the left elbow and other in the left submaxillary region. Above the right ee in the line of the great saphenous vein was a hard ep-seated swelling which differed from the other swellings the fact that it was larger, harder, more tender, and only ry slowly resolved. The left elbow- and right knee-joints re swollen, tender, and painful on movement. The elids were swollen and the facial appearance was suggestive nephritis, but there was no albuminuria. There were hæmorrhages into the skin. Another course of hæmostyl jections was given. The joint condition quickly subsided, d the deep swellings, with the exception of the one above e right knee, very soon resolved. The temperature soon l to normal. Forty-eight hours after the last injection hæmostyl the patient developed œdema of both eyelids, t this readily subsided without treatment. This was doubtedly an anaphylactic phenomenon.

During the next four weeks the patient's condition was tisfactory. Then he complained of pain in his right side d his temperature rose to 102·4° F., and pulse-rate 126. pleural rub was audible on auscultation at the right base. small effusion rapidly developed. On the next day rpuric spots appeared on the extremities, and also a w on the face and trunk. A systolic murmur was heard the apex. Hæmostyl was again administered as before d the temperature fell gradually. The effusion quickly solved. A general urticaria appeared after the last jection of hæmostyl. This was an anaphylactic phenomon again. One c.cm. of pituitrin was given and the ticaria disappeared completely in a few hours. A week ter the apical murmur was no longer heard.

Eleven weeks later the patient developed another attack of rexia associated with a deep-seated swelling in the region the left elbow and another near the left knee. Once again ese joints were swollen, stiff, and painful on movement. course of three injections of hæmostyl brought back e temperature to normal five days after onset. and the ep subcutaneous swellings and joint swellings quickly bsided.

Two weeks later the tonsils were removed by dissection. here was no excessive bleeding at operation. The patient ported nine months after tonsillectomy and was found to e in very good health; there had been no further attack f purpura.

During these attacks the blood platelet count was normal. ed cell count showed moderate anæmia, and white cell ount slight leucocytosis which was polymorphonuclear n type. The bleeding time was much lengthened, and he red cell sedimentation was abnormally high. Typical eadings during an attack were: platelets, 210,000 per mm.; red cells, 3,600,000; white cells, 12,800 per c.mm. polymorphs, 87 per cent.). Bleeding time, 4 minutes; red ell sedimentation rate, 66 mm. at the end of one hour. lood culture and urine were sterile during the attacks, and æces contained no abnormal bacteria. During the intervals he bleeding time fell as low as 1 minute and the red cell edimentation rate to 35 mm. per hour.

It is interesting to note that in only two of the ive attacks did cutaneous hæmorrhages appear. This shows that it is by no means invariable for hæmorrhages to occur into the skin; and that it is possible to have damage to the capillary endothelium to a degree sufficient to allow of the passage of plasma only as the sole manifestation of the diathesis. One cannot be dogmatic on the exact nature of all the deep-seated swellings. Many of these, considering their relatively short duration, were most probably caused by exudation of serum alone. Others, and certainly the very hard, tender, and slowly resolving swelling on the right thigh which occurred in the second attack after admission, were most probably due to hæmorrhages.

It is difficult to explain the swinging temperatures accompanying each attack in any other way than by the presence of some infective condition, probably originating in the tonsils. The attack of pleurisy was considered to be an infective condition, and the simultaneous purpuric eruption is significant. The interesting subcutaneous nodules which were observed on admission, and which were found to be due to a low-grade infection of the subcutaneous tissues, tend to confirm the opinion that some infective condition was present, as does the presence of the polymorphonuclear leucocytosis. It is interesting to note the constant improvement resulting from the administration of hæmostyl.

I am indebted to Dr. C. W. Curtis Bain for permission to publish this case, and for his criticisms.

ACUTE OBSTRUCTION OF THE BOWEL PRESENT AT BIRTH.*

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A PRIMIPARA had a fall when six months pregnant. The fall was followed by an illness lasting about a month, during which there was severe abdominal pain with vomiting. At this time she was not under my care. On recovery she went to term and was delivered. She was attended by a midwife who advised medical assistance to be sought since the child's abdomen was unusually prominent. The midwife declared that she delivered the head and shoulders without any difficulty, but that the perineum tore as the abdomen of the child passed the vulva.

A few hours after birth the child began to vomit meconium, later followed by quantities of bile-stained fluid. Both the breast and fluids by the mouth were refused and there was never any action of the bowels, although on rectal examination some sloughs were brought down on the finger. This made one suspect intussusception, but there was no straining, no passage of mucus, and no palpable tumour. The condition of the child at 2 days' old was so poor as to put operation out of the question, but he lingered on for a week, dying on the seventh day. Post mortem, the abdomen contained gas, but no free fluid. The intestines were everywhere matted together, but the adhesions were not of recent formation and were firm enough to tear the bowel when an attempt was made to separate them. The main obstruction was found in the proximal part of the jejunum, and was caused by kinking of the gut by a band of adhesion. Above the obstruction the bowel was much distended by gas and contained a small amount of bile-stained fluid, but below the stricture it was collapsed and empty. The bowel wall was congested in the upper part, but lower down it presented a normal appearance.

As regards ætiology, my theory is as follows: When the mother sustained her fall during the sixth month of her pregnancy she received a blow on the abdomen, and, as stated above, was confined to bed for a month with abdominal pain and vomiting. It would seem that this illness was an attack of peritonitis whose onset was determined by injury to and lowering of the vitality of her internal organs. If it may be assumed that the placenta either shared in the damage caused by the fall, or was injured by the ensuing infection, then one can believe that its natural protective influence was abolished and that bacteria gained entrance to the fœtal circulation by the blood stream. Unfortunately permission to examine was confined to the abdomen, so it is impossible to say whether there were other lesions to be found in the body of the child besides the signs of peritonitis. The midwife who attended at the birth did not examine the placenta with more than ordinary care, but her statement is that there was nothing unusual except the fact that it was of the battledore type.

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* Read before the Royal Medical Society of Edinburgh.

but most are content with remarking that the pressure was raised. Samson Wright[6] gives as normal figures 6 to 12 cm. of water, Purves-Stewart[7] 10 to 15, and Stitt[8] 9·5 to 12 cm. of water. Collier and Adie[9] give no figures but say "normally the fluid escapes drop by drop. If it runs rapidly or spurts out, this is an indication of the increase of cerebro-spinal pressure." Brain and Strauss[10] are the only authorities among those now quoted who draw attention to the influence of a cramped posture upon the pressure reading; they consider the normal limits to be 10 to 20 cm. of fluid.

When there is so little agreement among those who take measurements, and when the rough impression of the rate of flow from the needle is so generally accepted as an adequate record, it is hardly surprising that loose statements are prevalent.

In the above series of 313 cases of syphilis, in which routine examinations of the cerebro-spinal fluid were made, hypertension was the least common abnormality and there was no apparent relation between the degree of pathological change and the pressure of the fluid. In this series there were 20 cases of clinical neurosyphilis and 92 had pathological fluids, but only five showed pressures in excess of 20 cm. of fluid, and one of these was certainly due to congestive heart failure. These figures contrast strikingly with those presented by other authors and are in entire disagreement with the constantly repeated text-book opinion that hypertension is one of the earliest signs of syphilitic involvement of the central nervous system.

It may be objected that for the method I used it is necessary to fix a lower limit for the normal pressure, but if one were to apply a figure of 15 cm. of fluid to the present series, there would still be no agreement whatever between the hypertension and degree of change as estimated by other means.

It should perhaps be mentioned that I have no experience, in this respect, of general paresis or tabes, for those affections appear not to exist among natives of the Sudan; and, further, this paper deals only with syphilis. It is not suggested that increased pressure is not a common or reliable sign in other inflammatory or neoplastic disorders of the central nervous system.

CONCLUSION.

There appears to be little evidence that increased cerebro-spinal fluid pressure is either a common or a reliable indication of syphilis of the nervous system and the constant quotation of this sign in the text-books is the result of inaccurate observation.

I am indebted to the physicians and surgeons of the Sudan Medical Service, more especially to Dr. R. M. Humphreys and Mr. C. Grantham Hill, of Khartoum Civil Hospital, for access to cases under their charge.

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Clinical and Laboratory Notes

A CASE OF PURPURA RHEUMATICA.

BY LESLIE E. LUCAS, M.B. EDIN.,
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THE importance of a primary septic focus in cases showing the hæmorrhagic diathesis is still a matter of dispute. Ledingham[1] produced typical purpura hæmorrhagica in animals by injecting anti-platelet serum. Frank[2] and Kaznelson[3] considered the reduction of platelets in purpura to be the immediate cause of the purpuric manifestations. The former regarded the thrombopenia to be due to an aplastic state of the bone-marrow, caused by a toxic body in the spleen. Bedson,[4] however, as the result of work on guinea-pigs, concluded that diminished platelets were not sufficient alone to cause a purpuric eruption, and that some damage to the endothelial lining of the capillaries was necessary in addition. Brill[5] also considered that a simple diminution in the number of platelets was insufficient to cause purpura, and suggested that another factor might be some unknown substance produced by the spleen and acting through the blood. Kidd[6] drew attention to the frequency of a local focus of infection in his series of 24 cases of purpura of the urinary tract and the subsequent improvement on removal of the focus. Subsequent authors have stressed the frequent presence of a septic focus in cases of purpura, while some have associated the disease with a vitamin deficiency of an unknown nature.

The following case of Schönlein's purpura (purpura rheumatica) supports the theory that there is often an infective process acting as a primary cause.

A boy, aged 12 years, was admitted to Harrogate General Hospital on Sept. 22nd, 1930, with a history of a purpuric eruption which had commenced four months previously. At the onset the right knee was reported as being swollen, hot, and tender, but the joint condition subsided entirely in about eight days. For two months his temperature had ranged from 99° to 102° F. Twelve months before admission the patient had an attack of rheumatic fever. There was no relevant family history.

On admission the temperature was 101° F., and pulse-rate 100. The fading purpuric spots were still evident on the forearms and legs. A curious feature was the presence on the upper and lower limbs of numerous hard subcutaneous nodules, each about the size of a hazel-nut. The tonsils were large and not above suspicion as foci of sepsis. A systolic murmur was audible at the mitral area. The spleen was not enlarged. One of the subcutaneous nodules mentioned above was removed, and microscopic examination showed a round-celled infiltration of the subcutaneous tissue, suggesting a low-grade infection. Large doses of salicylates were given and the temperature subsided within 48 hours. The patient made an uninterrupted recovery. The mitral systolic murmur disappeared, and the subcutaneous nodules resolved.

On Dec. 29th the boy had an ingrowing toe-nail removed under a general anæsthetic (ethyl chloride). On the next day his temperature rose to 102·4° F. Quite rapidly large and tender swellings appeared in the subcutaneous tissues in the region of the larger joints of the extremities, most evident at the knee- and elbow-joints. The overlying skin was unaffected. The knee- and elbow-joints were slightly swollen, tender and painful on movement, but there was no redness of the overlying skin. Salicylates were again administered in large doses, and although the temperature persist [illegible] and joint swellings subsided quickly. [illegible] administered. A course of 10 c.cm. [illegible] for three days was given. The temperature quickly fell to normal.

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[1] Ledingham, J. C. G.: THE LANCET, 1914, i., 1673.
[2] Frank: Berl. Klin. Woch., 1916, xxxvii., 2.
[3] Kaznelson, P.: Zeit. f. klin. Med., 1919, lxxxvii., 133.
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[5] Brill, N. E.: Internat. Clinics, 1924, 34. s., i., 32.
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He considered that the duodenal tube might be used more freely by physicians in this country in the treatment of ulcer. The optimum time for operation should be chosen; diabetes and toxic goitre should be controlled before operation was undertaken. Gastric ulcer cases should be prepared for a few days and perhaps given a blood transfusion. Even a peritonitis case should be treated for a few hours to reduce shock and pain. Operation in a hospital or nursing home gave the patient a better chance of recovery than an operation in a private house. Assistants should be available, especially to give the most suitable type of anæsthetic. The mortality in the abdomino-perineal operation for carcinoma of the rectum had been greatly reduced by the use of gas and oxygen and spinal anæsthesia, and he preferred to wait until these were available before undertaking this operation. Every surgeon should consider his own limitations and avoid any operation which he did not feel he was capable of performing. To operate or not to operate was sometimes, for the patient, to be or not to be.

Mr. Sangster Simmond divided the profession into four classes: ultra-medical physicians; excessively surgical surgeons; surgically minded physicians; and medically minded surgeons. So little territory had been left unexplored in the surgical field that young surgeons were reduced to treating medical conditions surgically. The training of surgeons was limited to watertight compartments; few had any experience of general practice, although such experience would be valuable to them. The treatment proposed for gastric ulcer depended on whether the patient happened to be admitted to a medical or to a surgical ward. A borderline ward would be an advantage, under the joint control of physicians and surgeons, in order that they might collaborate on the treatment of the case.

Mr. Neil Sinclair said that when a surgeon opened a patient's abdomen and found, say, gallstones, some calcified glands, a gastric ulcer, and a chronic appendix, it required great restraint to be content with one major operation instead of four. Surgeons should not think of themselves as carpenters; they should keep in touch with medicine.

Dr. Maurice Shaw thought that surgeons were sometimes lured into excessive surgery by the physicians. In a large proportion of cases in which laparotomy was performed for suspected carcinoma of the intestinal tract, nothing abnormal was found. Surgeons were apt to complain that physicians sent them cancer cases too late, but in doubtful cases it was sometimes difficult to persuade the surgeons to operate. They preferred a certainty. He thought there was a place for cholecystostomy in the treatment of an infected gall-bladder. It was often impossible to detect macroscopically whether a gall-bladder was diseased, but quite a large number of normal-looking gall-bladders were not healthy, and simple surgical drainage often relieved the patient. Moreover, if the gall-bladder was left, there was still something more to do if the symptoms did not abate. The duty of the physician included the treatment of the patient with drugs, but few drugs were specific, and he regarded the physician chiefly as a diagnostician. He would like to see the physician confident in the diagnosis of all complaints, and the surgeon proficient in operative technique; it would then be the duty of the physician to tell the surgeon what to do and leave it to his discretion to carry it out.

Dr. O. L. Carden Sibley said that it was the duty of the general practitioner to decide whether the patient required medical or surgical treatment. In the treatment of duodenal ulcer he agreed that the patient should be given prolonged medical treatment, and later, if that failed, be sent to a surgeon for gastro-enterostomy. But after operation he must continue to follow a duodenal diet sheet for months, and possibly years. If sent back to the physician and properly looked after, he would be cured; if not, he would be one of the failures of surgery.

Dr. H. H. Sanguinetti thought that the powers of resistance of the patient should be fully investigated before operation, and in this connexion the opinion of the general practitioner would be valuable.

Mr. F. M. Loughnane said that not enough surgery was being done at the present time. With an enlarged prostate, back pressure might exist without giving rise to symptoms, and that was the stage at which operation was desirable. General practitioners often delayed too long before calling in the surgeon to cases of appendicitis and peritonitis. Hurst admitted that 20 per cent. of chronic gastric ulcer cases died of carcinoma. Among those operated on the proportion was much less. Laparotomy did no harm and made it possible to prevent the onset of carcinoma.

Dr. Howard Stratford considered that there was a good deal of unnecessary surgical interference in the nasopharynx. He had seen few good results from septum operations. It was not merely the turbinals or septum which were at fault in nasal obstruction; the neighbouring sinuses were often chronically infected, and were extremely difficult to treat.

The President said that the development of preventive medicine might ultimately lead to the disappearance of surgery. Children and young adults should have periodic examinations to prevent the development of serious conditions later in life.

Mr. Hamblen Thomas and Dr. Geoffrey Evans replied.—Mr. Zachary Cope said that he thought Mr. Loughnane was unduly severe in saying that the general practitioner called the surgeon in too late to cases of appendicitis. Often in such late cases the general practitioner had only been summoned himself an hour or two before.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

At a meeting held on April 26th, with Dr. Letitia Fairfield, the President, in the chair, Lady Barrett proposed that a group should be formed for the study of anæsthesia in midwifery, the group to be composed of women obstetricians and gynæcologists in London. This proposal was accepted.

Dr. Gladys Dodds then delivered an address on the

Aschheim-Zondek Test.

Tests for pregnancy used in the past, she said, had shown a large percentage of error, but the accuracy of the Aschheim-Zondek test had been confirmed by everyone who had used it. During pregnancy the urine contained œstrin and a hormone secreted by the anterior lobe of the pituitary. It was upon the anterior lobe hormone that the test depended; the hormone stimulated the development of ovarian follicles and ovulation, as a result of which œstrin was secreted. It was non-specific, inducing changes in the ovary of the female and the testis in the male; œstrin, however, was a specifically female hormone. When the urine of a pregnant woman was injected

MEDICAL SOCIETIES

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this society on May 4th, with Dr. H. H. MILLS, the President, in the chair, a discussion on

Excessive Surgery

was opened by Mr. HAMBLEN THOMAS, who declared his intention of being provocative. From the early days of history, he said, trephining of the skull had been performed to let out evil spirits; the Assyrians and the Egyptians had practised the operation. In ancient Greece medicine was held in great esteem. Surgery received a fresh stimulus in the sixteenth century from the study of anatomy, and during the seventeenth and eighteenth centuries the study of physiology had advanced. There was a time when the surgeons at some of the large hospitals called on the physicians every morning for orders. When antiseptics and anæsthetics came into use in the nineteenth century a wider range of operations became possible. Some degree of antagonism had existed between physicians and surgeons in the past, but good results were to be hoped from the collaboration of physicians and surgeons in the future, and the coöperation of the family doctor with the surgeon was especially valuable. All operations involved danger, if only from the anæsthetic, and he occasionally wondered whether certain operations were not too extensive. Simple amputation of the breast for carcinoma, to take an example, appeared to give results almost as good as the complete Halstead operation. Mutilated limbs could sometimes be saved from amputation if the vascular supply was good. The phrase "surgical interference" was commonly used, and if interference were carried to extremes every child would have its appendix removed to avoid the chance of appendicitis. Drastic surgery might sometimes be worse than the disease, as in resection of the colon, some cases of gastrectomy, and operations for carcinoma of the thoracic œsophagus. Tonsils were frequently removed from patients in whom nasal trouble had been overlooked. A time might come in the future when all disease would be cured or aborted by medical measures, and only orthopædic and repair work would be left for the surgeons.

A MUTUAL FIELD OF WORK.

Dr. GEOFFREY EVANS said that though there had been antagonism between physicians and surgeons in the past they now worked in collaboration, in London at least. Physicians, although lacking the surgeon's skill with special instruments, such as the cystoscope, were beginning to approach surgeons in their capacity to diagnose surgical conditions, and were supplying patients to the surgeons. Ignoring other aspects of surgery, he wished to consider that field in which physicians and surgeons were watching each other to decide which could do better for the patient. It was excessive surgery to open the thorax or the skull for exploratory purposes, unless the surgeon had some idea where to make the opening. With the abdomen it was less important to know where to make the opening than to have some idea of the nature of the disease. Bleeding from the bowel, for example, might come from an ulcer or a new growth, and operation might cure the patient; on the other hand, if the bleeding came from an arteriosclerotic vessel operation might kill him. Pain was among the causes of excessive surgery and a certain number of operations were performed for functional causes such as spastic colon, because of the pain of the patient and sometimes because of the anxiety of the relatives. Too many operations were performed for adhesions, a diagnosis which was accurate not more than once a year in any considerable practice. Operations were also performed to improve on nature, such as gastropexies and cæcopexies; nephropexy was occasionally advisable and curative, but 'pexy operations as a whole were too often followed by visceral sensations which, if noticed as a sequence to operation, were less amenable to treatment than if noticed before. Peptic ulcers were among conditions for which both medical and surgical treatment were available. A certain number of patients would die of peptic ulcer in any case, whatever treatment was employed. Hurst and Ryle obtained good results with medical treatment, and it was equally certain that the results of surgical treatment were good. If a patient survived two years after operation his expectation of life was probably better than it would have been without operation; but some failed to survive, and 15 to 20 per cent. were not improved by surgical treatment. In his opinion, if death from hæmorrhage or perforation was to be feared, operation should be advised; if not, the patient should be given medical treatment for two or three years, and, if this was not successful, operation could then be performed. In the case of certain organic diseases to which recognised symptoms were attributable, operation sometimes failed to relieve the patient; examples were chronic appendicitis, cholelithiasis, and tonsillitis. Removal of the gall-bladder in cases of cholecystitis might fail to remove the symptoms, and symptoms attributable to chronic tonsillitis were not necessarily due to infected tonsils. In an appreciable number of cases symptoms usually attributed to the respiratory tract were due to hyperchlorhydria. Faulty posture, atmosphere, and diet might all play a part in producing symptoms. Surgery, in his opinion, was not excessive at the present time, but he feared lest it should be in the future. The patient should be examined thoroughly by his doctor before being recommended for surgical treatment.

THE CHOICE OF THE PATIENT.

Mr. ZACHARY COPE said that physicians were of two kinds: those who were conservative and looked upon surgeons as their natural enemies, and those who inclined towards excessive surgery, and expected the surgeon to achieve the impossible. The patient could always refuse to have an operation, and it was no part of the surgeon's business to tell him he would die unless he submitted to it. The surgeon might be mistaken in his opinion; patients with symptoms of obstruction of the small intestine having refused operation and taken castor oil had recovered. Surgery should not be recommended merely because something abnormal was discovered, such as a lipoma which was occasioning the patient no discomfort. Every man over 50 or 60 had an enlarged prostate, but this did not require to be removed unless it was affecting the condition of the kidneys or interrupting his life in any way. Operation should not be performed for any condition amenable to medical treatment until medical treatment had been thoroughly tried. But in some cases operation might be hastened for economic reasons, for example, where a patient with gastric ulcer was likely to lose his job as a result of needing recurrent periods of medical treatment.

REVIEWS AND NOTICES OF BOOKS

Manipulative Surgery.

By A. S. BLUNDELL BANKART, F.R.C.S., Orthopædic Surgeon, Middlesex Hospital, Royal National Orthopædic Hospital, and Hospital for Epilepsy and Paralysis, Maida Vale. London: Constable and Co. 1932. Pp. 150. *7s. 6d.*

Mr. Blundell Bankart's aim has been to give a brief and intelligible account of some of the uses and abuses of manipulation in surgery. To this end he has included an account of those pathological conditions—excluding fractures and dislocations, and deformities such as club-foot—which most often call for manipulation in the course of their treatment. The general practitioner, for whom the book is primarily intended, is thus provided not merely with a narrow description of a particular method of therapeutics, but with guidance in the diagnosis and treatment of some common surgical affections. The author deals in general terms with sprains and adhesions, the postural activity of muscles, postural deficiency, torsion injuries, subluxation of joints, various forms of arthritis, and the general principles of manipulation with a note on its dangers and failures. Separate sections are then devoted to the foot, with special emphasis on foot strain; the knee; the hip; sprain of individual muscles and tendons in the lower extremity; the spine and pelvis; the fingers, hand, and wrist; the elbow and the shoulder. The last two sections of the book are devoted to a discussion of bone-setting and osteopathy, and to a concluding chapter which summarises arguments previously set out.

Of especial interest is the pronouncement that uterine displacements and intrapelvic diseases do not give rise to localised pain and tenderness over the back of the sacro-iliac joint, but that gynæcological operations often do put a very great and unnatural strain on the joints of the pelvis and lumbar spine. Mr. Bankart states categorically that uncomplicated sacro-iliac strain does not cause pain along the course of the sciatic nerve, and that "sciatica" is nearly always associated with spinal arthritis. Sacro-iliac strain can generally be cured by manipulation or if this is not successful by arthrodesis of the joint. He condemns the common practice of treating these cases with rest, local applications, massage, and exercises (without preliminary manipulation) and "sacro-iliac supports." Lumbar back-strain, which is the next common cause of low back pain, also responds to manipulation, but lumbo-sacral pain does not. Manipulation combined with efficient physiotherapy may be expected to benefit appreciably about half the cases of spinal arthritis with or without secondary sciatica.

For Mr. Bankart's views on the indications for manipulative surgery in various lesions of the joints of the limbs reference must be made to his book, where the appropriate technique is fully explained and illustrated. Here we need only note that he writes with lucidity and force, and that his book will be invaluable in helping to dissipate the atmosphere of mystery which bone-setters have allowed, and indeed encouraged, to become associated with their names. Though he has some hard things to say, the author does not say them in any spirit of vindictiveness. There is no reason why he or any orthopædic surgeon should be vindictive, but he shows that the interpretation which bone-setters themselves place on their clinical findings cannot be upheld on any anatomical or physiological grounds.

In the introduction of the book the physiological considerations underlying some of the general principles of orthopædic surgery are discussed in a highly illuminating manner and the same standard is maintained throughout.

This is indeed an admirable little book.

Genetic Principles in Medicine and Social Science.

By L. HOGBEN, M.A., D.Sc., Professor of Social Biology in the University of London. London: Williams and Norgate, Ltd. 1931. Pp. 230. 15*s.*

Prof. Hogben is always readable and usually interesting, and he has now written a book which should be important if some of those concerned will take what he says to heart. Briefly, his argument is that we now know enough about human inheritance to be sure that in some instances the genetical principles worked out on animals apply also to man, quantitatively as well as qualitatively, that the fanciful antithesis between nature and nurture must be given up, and that scientific inquiry has now advanced to the stage where research is justified and propaganda is not. He desires in short that the study of human genetics should be removed from the atmosphere of the drawing room to that of the laboratory, and that sincere scientific investigation should replace amateur political speculation. He believes, for example, that most of what has been said and written in recent years about the incidence and possible control of feeble-mindedness is superficial and misleading, that a single-gene hypothesis will not explain the whole of its genetic origin, and that there is clear evidence that Mongolian idiocy is largely due to environmental factors. We are not surprised therefore to find that he objects to what he frankly calls the aristocratic bias in which eugenists have so freely indulged and begs them to be a little more sure of the facts before they clamour for practical action. In particular he points out in several places how the medical profession can help in accumulating the data which are so much needed, and his book certainly ought to stimulate a number of people to take a hand in so good a cause.

Artériographie des membres et de l'aorte abdominale.

By REYNALDO DOS SANTOS, Professor of the Faculty of Medicine of Lisbon, Surgeon to the Hospitals; and A. C. LAMAS and J. P. CALDAS, both Surgeons to the Hospitals, Lisbon. Paris: Masson et Cie. 1932. Pp. 192. Fr.45.

THE pioneer work of certain Lisbon surgeons on the injection of arteries in the living subject has excited widespread interest. It has been developed so far afield as Japan where an oily medium for the opaque substance has, it is claimed, obviated certain dangers and made anæsthesia unnecessary. In an interesting little book Prof. dos Santos and two surgical colleagues admit the drawbacks which attend the use of lipiodol. Their own early work was carried out with uroselectan and abrodil, but they now extol the virtues of a new thorium compound of which the injection is said to be painless. By puncturing the vessels, mostly under anæsthesia, which is unnecessary with the thorium compound, the authors have examined 300 cases, ranging from gangrene of the limbs to aneurysm of the aorta, and they describe into immature mice, it produced ovarian changes which could be used for the diagnosis of pregnancy. The exact day on which the anterior lobe hormone first appeared in the urine of a pregnant woman had not been ascertained, but it was present by the third day after the first missed menstrual period, and it was thought to appear after embedding of the ovum. The amount of hormone secreted in the urine increased rapidly, and reached a maximum during the first two months of pregnancy; it disappeared on about the eighth day of the puerperium. The œstrin in the urine increased more slowly, and reached a maximum between the third and seventh months; it also disappeared on about the eighth day of the puerperium. Five immature female mice, each weighing 6 to 8 g. were used in making the diagnosis, and received injections of 5 c.cm. of urine over a period of three days; they were killed 100 hours later, and the ovaries examined. If the result was positive, certain typical changes would be found which were diagnostic of pregnancy in the patient. The test was valuable in distinguishing the amenorrhœa of pregnancy from amenorrhœa due to other causes. Fibroids complicating pregnancy sometimes led to difficulties of diagnosis. In pulmonary tuberculosis, heart disease, or chronic nephritis the test was particularly useful in establishing the diagnosis of pregnancy early; it could also be used in making the differential diagnosis between ectopic gestation and acute salpingitis or adnexal tumour. A positive result was not proof of a living pregnancy, but only of living placental tissue. In the presence of hydatidiform mole and chorion epithelioma the test was often positive with unusually high dilutions of urine. The greater the dilution the greater was the suspicion of some abnormality of the placental tissue. If the test had become negative following delivery, and subsequently became positive again, there was a strong suspicion that chorion epithelioma was present. She described a case of this kind in which pan-hysterectomy had been performed; the Aschheim-Zondek test had again become negative following the operation, and had remained negative ever since. There had been no sign of recurrence.

Dr. DULCIE STAVELEY then spoke on the

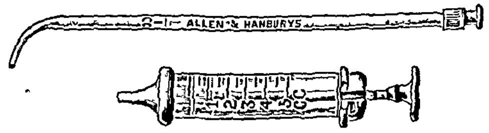
Diagnosis of Pregnancy by X Rays.

The fact of pregnancy, she said, was usually established before X rays were used. For diagnostic purposes radiography had little value before about the sixteenth week, though in the United States it was claimed that a diagnosis could be made at the fourteenth week. Usually X ray examination was used to confirm the diagnosis. A method of injecting lipiodol into the uterus in order to make an earlier diagnosis was said not to cause abortion, but it only showed a rounded swelling in the wall of the uterus, which was not in itself diagnostic of pregnancy. Adiposity of the patient might help to obscure the picture, and a lively baby sometimes spoiled the film by moving. The spine was the first part of the fœtus to become visible upon X ray examination and showed first as a row of stippled dots; patches of calcification in a fibroid might be confused with the early appearance of the spine. The maturity of the fœtus could be estimated by the size of the spine and skull, and by the appearance of the various bones in the skiagram. The os calcis appeared between the twenty-first and the twenty-ninth week, the astragalus between the twenty-fourth and the thirty-second week, and the epiphysis of the femur at about the thirty-sixth week. In a post-mature fœtus the epiphysis of the upper end of the tibia might be seen. Estimation of maturity, however, could not be made more accurately than within a fortnight. X rays were valuable in clearing up the diagnosis in cases of suspected multiple pregnancy. A dead fœtus could often be recognised by a sagging attitude, overlapping of the cranial bones and by the fact that no growth was seen to have taken place when a second examination was made after an interval; often, too, the fœtus would be found to be in exactly the same position at the second examination as at the first. Malpresentations such as breech with extended legs, face, and transverse presentations could be demonstrated by radiography. The placenta was not normally visible, but it might show calcified patches, and these might be useful in the diagnosis of placenta prævia. Abnormalities in the mother, such as lordosis, scoliosis, spondylitis, osteomalacia, or deformities of the pelvis or hip-joint could be demonstrated. Disproportion between the head and the pelvis could not be demonstrated well by a lateral view, but recently it had been made possible to take a vertical radiogram, showing the fit of the head in the pelvis, and measurements could be made against a calibrated scale. Abnormalities of the fœtus such as anencephaly, hydrocephaly, and even spina bifida might be demonstrated radiographically before birth. Dr. Staveley showed lantern slides of radiograms of the conditions described.

NEW INVENTIONS

A NEW URINOMETER PIPETTE.

THE urinometer pipette here illustrated has been found very convenient for use with the urinomete of Doremus. Instead of a teat there is a butt a the end which will fit on to an all-glass or Record syringe. It is graduated as usual to deliver 1 c.cm In use, the syringe and pipette are assembled and the urine is drawn up into the pipette, any exces being expelled. The urine can then be slowly delivered into the urinometer in the usual manner The advantages gained by the use of this combination over the ordinary pipette and teat are as follows (1) As the urine can be expelled slowly there is no reflux of the nitrogen into the short limb of the urinometer and thence its escape through the bulb into the air. This is a common experience when the teat is used and must vitiate the result of the estimation which may be important when the percentage of urea is small. (2) If the urinometer has not been recently used and reliance is placed on the teat it may be found that it has perished and spare teats may have likewise perished or be too small. (3) Time is saved as the teat has not to be manipulated down the pipette until the 1 c.cm. mark is reached if there is any excess urine drawn up. The illustration depicts a 5 c.cm. syringe, but for use with the urinometer of Doremus only a 1 c.cm. syringe is required. The combination as illustrated might be made use of when any small quantity of fluid is required; for instance, in measuring the urine when Gerrard's urinometer is used; but in that case a longer pipette would be required.



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[See also pp. 13, 28, & 29.]

also a great deal of work done in abdominal investigation. Some of the most striking results are to be seen in the diagnoses of kidney conditions. The illustrations are clear and documented; radiograms taken at the time of injection are accompanied by a description of symptoms, and a note of the method of injection and of the results obtained from the reading of the radiogram. Throughout the book it is emphasised that the method is safe, at least in experienced hands, and whilst the authors regard it as of great value, they point out modestly that they are only building up their experience and are not dogmatic as to the results.

It is obvious, we think, to anyone who reads the book carefully, that new horizons of investigation and diagnosis have been opened by this work. It is difficult to convey the curious results of the opaque injection of arteries to anyone who has not been fortunate enough to see the radiograms. For diagnostic purposes such conditions as the displacement of an artery by a tumour can be shown, and occasionally the abnormal formation and distribution of vessels in sarcomata can be observed. The book is written in French and has a short preface by Prof. Leriche. The illustrations are mostly well reproduced.

Schizophrenia (Dementia Præcox).

An Investigation of the Most Recent Advances. By Various Contributors. London: Baillière, Tindall, and Cox. 1931. Pp. 246. 21*s.*

THE earlier volume on schizophrenia in this series is now supplemented by the collection of papers, read in 1929 at the tenth annual meeting of the Association for Research in Nervous and Mental Disease. The clinical section opens with a paper by Malamud and Rothschild on the permeability of the barrier between blood and cerebro-spinal fluid, examined according to Walter's method; the distribution-ratio of the bromide was found to be high in a majority of the 210 cases examined, and the general findings of the German workers were corroborated. The deficiency of catalytic iron in the ganglion cells of the cerebral cortex in schizophrenia is confirmed by W. Freeman, who refers to the earlier investigations of Koch and Mann. P. J. Trentzsch writes briefly on the results of testing the circulatory system in the usual way; his conclusions are too far-reaching. A somewhat banal essay by Macfie Campbell pleads that the benefit of the doubt be given to environmental factors in the ætiology of psychosis. An unfinished statistical study of prepsychotic personality by Bowman and Raymond yields a number of interesting findings, some of them running counter to current teaching. Jelliffe's article on Vigilance, Motor Pattern and Inner Meaning is rather a hotch-potch, being an unsuccessful attempt at synthesis; the careless style makes it difficult to read.

A sober sketch of the position with regard to anatomical findings in schizophrenia, by the Munich pathologist, W. Spielmeyer, is followed by H. S. Sullivan's brief reassertion of the familiar rule that a stormy onset in schizophrenia suggests a favourable outcome. A more serious study of prognosis is that of E. A. Strecker, amplifying his earlier report; the cases of 25 schizophrenic patients who recovered are examined in detail. G. Zilboorg presents a paper on treatment, viewed as a matter of affective reintegration; it covers more than its subject, and is ill-grounded in its assertions about the nature of schizophrenic thought-disorder; it is a psychoanalytical study, argument being based on the single instance. A summary of the results obtained by different methods of treatment, by L. E. Hinsie, and a report on the effect of sodium amytal as a narcotising agent in 15 cases of catatonia, by W. J. Bleckwenn, conclude the volume. After nearly all the papers a verbatim account is given of the discussion which followed.

The book is uneven in quality, but it bespeaks the wide range and activity of research into this problem that is going on in the United States.

Views and Reviews.

First Series 1884–1919. By HAVELOCK ELLIS. London: Desmond Harmsworth. 1932. Pp. 322. 10*s.* 6*d.*

THIS volume contains thirty-two hitherto uncollected essays arranged in chronological order and covering a period of 35 years—1884 to 1919—in the life of the distinguished humanist. A chronological series of essays by a man of numerous interests and wide culture must make disorderly reading, inasmuch as at an average of every ten pages the subject changes entirely. Mr. Ellis in a prefatory note acknowledges that the essays are so various in character that they cannot be classified, the one thing that they have in common being "that it has never proved possible to fit any of them into my books." Some of them seem hardly to be worth resuscitating, but others make enjoyable reading, and often the date is of significance, inasmuch as the period in which an article was written may supply interesting sidelights on the matter discussed. A second series will follow including essays which appeared between the years 1919–1932.

The Philosophy of Sport.

By P. MCBRIDE, M.D., F.R.C.P.E., F.R.S.E. London: Heath Cranton, Ltd. 1932. Pp. 190. 7*s.* 6*d.*

THESE chapters on sport in its various aspects make interesting reading; the reflections are based on personal experience and cover a wide range, inasmuch as the author enjoyed unusual opportunities for the exercise of many diversions. In a summary of the developments of sport during the past 50 years, contributed recently by Lord Desborough to a series of articles in the *Times*, the question was raised whether the word "sport" should include games, or should be confined to such varieties as implied the pursuit of a quarry. In the greater part of Dr. McBride's book he follows the latter definition, being very interesting in regard to fishing, shooting, and hunting, but nearly silent in respect of the playing of ball games. He recognises, however, that for reasons of economy the number of those who can engage in the sport that demands a quarry must be small compared to the number of those who can take their exercise and gain their amusement at football, cricket, or golf, and in discussing the growth and decline of sporting tastes and the British attitude towards sport he is informing. In one chapter he gives a scheme of physical culture, derived from Mr. Bruce Sutherland, into which he has introduced certain modifications, which is certainly rather an excrescence on the scheme of the book, but is justified by the medical authorship. Most of the exercises laid down are familiar, but they are set out very clearly, and there is no doubt that regular practice in them would often conduce to improvement in health.

THE LANCET.

LONDON: SATURDAY, MAY 14, 1932.

THE POWERS OF MINISTERS.

PUBLIC opinion has long been uneasy about bureaucracy and the undying rule of D.O.R.A. To various citizens bureaucracy variously means the arbitrary usurpation of legislative or judicial functions, the too paternal limitation of our liberties and simple pleasures, the intolerable infallibility of all jacks-in-office (whether the office is central or local), and the intrusive importunities of the tax collector. As to the survival of D.O.R.A., we vaguely understand that the Defence of the Realm Acts and Regulations, operating only for the duration of the war, have expired, though several elements of permanent value have been incorporated in the statute-book as post-war Acts of Parliament, the Dangerous Drugs Act of 1920 being an obvious example. It is unfair to scold the Civil Service for matters of policy. The irritating restriction on the sale of chocolates in theatres was the direct and deliberate decision of a post-war Parliament: the same is true of the "permitted hours" for the sale of alcohol. But, if some of our complaints against bureaucracy must be laid at the door of Parliament, there is nevertheless a popular impression that Whitehall takes too much upon itself. When our Civil Servants were solemnly indicted by so brilliant an advocate as the Lord Chief Justice, some notice had to be taken. In the Donoughmore Committee on Ministers' Powers the Lord Chancellor assembled a strong tribunal of investigation. Its report (Cmd. 4060. 2*s*. 6*d*.), if in places discursive and didactic, is almost the first effort to face the problem: it tells us how far our complaints are justified.

The first half of the inquiry concerned delegated legislation. Is the system of departmental rules and orders improper? Has it been abused? The report declares it to be inevitable; the senior Parliamentary Counsel testified that, if we must have all the new legislation which the country is supposed to want, Parliament itself cannot cope with the task unaided. The Committee assures us that the practice is not unconstitutional. How could it be? Parliament cannot simultaneously surrender its functions to a Minister and complain that he usurps them. Nor is the system new: official statistics surprisingly showed that fewer Statutory Rules and Orders have been registered annually in the past few years than in many years before the war. But, if the quantity is not increasing, the scope is changing. The advantage of flexibility and experiment, the technicality of the subject matter and the impossibility of foreseeing all contingencies and local conditions—these explain the convenience of delegated legislation. The pressure on Parliamentary time, it is admitted, means the progressive incapacity of Parliament as a legislative machine. If Bills are to pass, short cuts are necessary. When, for instance, the Mental Treatment Act instituted temporary treatment for mental patients, it left the Board of Control to make a code for the conditions of their detention. Finally, in face of genuine emergencies—a great war, a general strike, or a financial crisis—the common sense of Englishmen will tolerate exceptional methods. Plague in the Baltic in 1710, cattle distemper in 1746, and cholera in 1832 provided precedents for delegation. Remarkable recent examples, for imposing salary cuts or for taxing imports, are justified, if at all, by the emergency. Yet even here Parliament advertises its legislative failure. The bundle of Orders in Council under the National Economy Act, which played havoc with the statute-book last October, might just as well have been enacted by Parliament itself if the machine could work as swiftly as when it lately passed the Act to indemnify Presidents of the Board of Trade. In pronouncing delegated legislation to be not only convenient but also necessary, the Committee rightly insists upon safeguards. The greatest of these are the power to fix responsibility upon the Minister and the power of the law courts to quash a regulation as ultra vires. Proper publicity and prior consultation with interests concerned are other sensible precautions. The Committee recommends, too, a new and special Parliamentary scrutiny both of Bills which propose delegation and of the departmental rules and orders which flow therefrom. The work of scrutiny will probably fall mainly on the officials of the two Houses, but the principle will serve to remind the members themselves of the duty of vigilance.

The second half of the inquiry concerned the quasi-judicial functions entrusted to Ministers and departmental tribunals, often to the exclusion of the judges' jurisdiction. The medical profession is well aware of this process in the operation of the National Health Insurance Act. Naturally the central and local administration of matters like housing and public health requires the enforcement of standards which are more a matter of social policy than of judicial interpretation. In appeals on questions of reasonable fitness for human habitation, house drainage, or sanitary accommodation, the Minister has the last word. His punitive power over panel practitioners is great. It has been complained too that his procedure is peculiar, for instance, in deciding upon boundary extensions or slum clearance orders. A visible inspector may hold a local inquiry. After hearing evidence which is often irrelevant, he reports in secret to an invisible and anonymous body which reaches conclusions partly judicial, partly administrative; finally the department announces its decision without necessarily giving reasons or following precedents. Notwithstanding certain judicial dicta in the Arlidge case, the Donoughmore Committee advises the publication of inspectors' reports. It lays down valuable principles as to the elements of natural justice which departments must respect. A Minister ought not to be a judge in his own

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the under 5 group would include more positive actors than any group of the same size composed older children. Whereas the immunisation of 00 children below 5 might create as many as 0 or 600 fresh immunes, in the older age-groups e fresh immunes produced might not exceed 300 400 per 1000 "immunised," depending in each se upon the environment and social status of e children treated. It is clear that a smaller rcentage of mass immunisations of young children ust be more valuable as a preventive measure han a larger percentage carried out upon older ubjects. Godfrey remarks that the evidence hether active immunisation does or does not revent the individual from becoming a carrier equivocal. In any case, he thinks, the reduction f the carrier-rate is probably a relatively nimportant factor, and indeed—since carriers "tend to develop carriers and presumably mmunity, whilst cases have a much greater endency to develop new cases"—the carrier, lthough a chief source of infection, may be egarded "as the cheapest source of naturally cquired immunity." In another paper Dudley[4] lescribes some interesting observations at reenwich Hospital School, the source of many aluable contributions to the epidemiology of liphtheria, upon latent infection with *C. diphtheriæ*. Although there is as yet no satisfactory evidence than an avirulent strain of diphtheria bacilli may acquire virulence, it is generally accepted that the reverse may happen. Dudley thinks that the anomalies which he found in the distribution of latent infections and Schick immunity in this semi-isolated community may be satisfactorily explained upon the hypothesis that when a Schick susceptible is infected with virulent diphtheria bacilli the latter often acquire avirulence. It is to be hoped that further observations may be carried out in order to show with what frequency this loss of virulence occurs amongst infected Schick positives in the general community.

Discussing the relative value of some diphtheria prophylactics, Dudley[1] insists that comparative tests should be made upon groups which not only have the same original Schick reaction frequencies but which, during the time of their immunisation, live under identical conditions, especially as regards risk of infection with virulent diphtheria bacilli. In the earlier days of immunisation the prophylactic used was toxin mixed with antitoxin (T.A.T.) in such a way that toxin was slightly in excess. T.A.T. is still used in America, but there, as in other countries, it is being or has been replaced by some preparation of toxoid (Glenny), the anatoxin of Ramon. Not only is toxoid free from the objections which have been urged against T.A.T.—its liability to dissociation of toxin under unsuitable conditions of storage, and the possibility, largely theoretical, of producing sensitisation to horse serum—but, as Dudley points out, it is a much more powerful antigen. He quotes the results of W. T. Harrison, G. F. and G. H. Dick, G. Ramon, and himself, which go to show that 94 to 97 per cent. of susceptibles, whether adults or children, who received toxoid became negative Schick reactors within a few months. In Harrison's experience any batch of toxoid immunised about 30 per cent. more children than any batch of T.A.T. It has been objected, however, that toxoid at full strength, especially in adults, gives rise to troublesome reactions. In this country, in order not to diminish or even extinguish totally the very feeble flame of enthusiasm for active immunisation, it has been considered important to use prophylactics which caused an absolute minimum of reactions. Ramon and Debré[2] hold that this objection to toxoid (anatoxin) has been greatly exaggerated. They claim that millions of injections have been followed by a very small percentage of slight reactions and by a trifling number of somewhat more severe happenings, and are satisfied that in France such reactions as occur cause no concern either to the doctors or the public. Ramon and Debré deprecate this fear of reactions, and think that the modified prophylactics such as toxoid-antitoxin (T.A.M.) and toxoid-antitoxin floccules (T.A.F.), both of which are widely used in this country, possess no advantages over anatoxin. Dudley finds not only that the reactions following toxoid are more frequent age for age than after floccules, but that the reactions following Ramon's toxoid were more intense than those caused by English toxoid, whereas the immunising powers of the French and English preparations were equal. He considers that in the case of adults and protein-sensitive reactors, in whom toxoid may produce very unpleasant symptoms, floccules should always be used when available. The ideal prophylactic would, of course, be one which as the result of a single symptomless injection produced solid immunity in a short time. Ramon and Debré refer to the work of Claus Jensen, who succeeded in preparing a concentrated toxoid of such high antigenic value that the injection of 1 c.cm. into 100 Schick-positive children rendered 91 per cent. immune in a month. Whilst applauding this success they point out that it would be necessary to prepare about 60,000 litres of ordinary toxoid (anatoxin) in order to furnish sufficient of the concentrated product to immunise 1,000,000 children. If three injections of Ramon's standard preparation were used, only 3000 litres would be required.

In order to simplify and popularise immunisation the introduction of the antigen by routes other than subcutaneous or intramuscular has been tried. Oral administration of anatoxin was shown by Ramon and C. Zoeller (1926) to be valueless. The inferiority of the oral route in the case of scarlet fever toxin has recently been demonstrated by the Dicks.[5] These observers found that the ingestion of an average total exceeding 8,000,000 skin test doses per person only immunised 73·1 per cent. of a series of Dick-positive reactors, whereas when the same toxin was injected subcutaneously into another series of susceptibles a total of 135,500 skin test doses per person converted 93 per cent.

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[4] Jour. Hygiene, April, 1932, p. 193.

[5] Jour. Amer. Med. Assoc., April 23rd, 1932.

cause. It advocates supervision by the High Court wherever it can be alleged that the Minister or departmental tribunal has exceeded statutory powers. It recommends a right of appeal on points of law; but not on points of fact. And, to simplify recourse to the law courts, the Committee advises that the Crown Proceedings Bill be passed into law and that the archaic procedure of certiorari, mandamus, and the like be replaced by something more modern and less cumbrous.

In both parts of its inquiry the Committee's report, after opening our eyes to the gravity of the problem, is reasonably reassuring. The situation contains elements of danger; safeguards are necessary; but as yet there has been no serious abuse. Part of the trouble, we are told, comes from the obscurity of the language of statutes. Some of the departmental rules and regulations, it is added, are framed by departmental legal advisers who are not as careful as the Parliamentary Counsel to avoid exceeding statutory powers. This is strange. The now much enlarged office of the Parliamentary Counsel is largely recruited from the departmental legal advisers; the latter must always be in constant touch with the former; why cannot the departmental advisers be brought up to a uniform high standard? On the whole the Donoughmore Committee makes us feel that we know the worst. Parliament, says the report, has not realised the extent of its surrender. The warning is useful. Lord HEWART is thanked for sounding the alarm, but the conspiracy theory, set forth in the "New Despotism," is definitely found to be without a shred of evidence. The departments are discharged without a stain upon their character but are told to be more careful in future.

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THE PREVENTION OF DIPHTHERIA.

IN this country active immunisation as a communal measure of protection against diphtheria makes but slow progress. Yet Surgeon-Captain S. F. DUDLEY[1] believes that if as many as 80 or 90 per cent. of children under 10 years of age could be maintained Schick-immune, diphtheria would for practical purposes vanish within five years. This view is founded on results already obtained elsewhere. Ample evidence is now available that the incidence of diphtheria can be reduced to negligible proportions by immunisation on a sufficiently large scale. In Canada, for example, according to M. M. G. RAMON and R. DEBRÉ,[2] nearly 1,000,000 people out of a population of 10,000,000 have been immunised, with the result that diphtheria morbidity has been reduced by nine-tenths. But when individual cities are compared it appears that the production of a high aggregate of immunes of all ages is not nearly so effective in reducing the incidence of diphtheria as is concentration of effort—though not to the exclusion of other age-groups—upon children of pre-school age. DUDLEY compares the results of intensive anti-diphtheria campaigns recorded by J. G. FITZGERALD, of Toronto, and by M. A. ROSS and N. E. MCKINNON, of Hamilton, Ontario. In Toronto, although a full immunisation course was followed by the practical eradication of diphtheria from the group protected, there was no evidence that the total diphtheria morbidity had fallen. This, DUDLEY suggests, is because only a third of the school-children and apparently no pre-school-children were protected. He concludes that the proportion of the school population immunised was too small to afford any indirect protection to the uninoculated. In Hamilton, a city of 129,000, the average annual incidence of diphtheria between 1905 and 1924 was 284 per 100,000. In 1925 an intensive campaign resulted in the immunisation of some 26,000 children in the school and pre-school groups and a drop in the morbidity-rate to nine per 100,000 during each of the years 1927 to 1930. In Hamilton, not only was a greater proportion of school-children immunised than in Toronto, but relatively as many of the pre-school-children were also protected. From these data DUDLEY deduces that immunisation of the pre-school group is of supreme importance. His deduction is borne out by the observations of E. S. GODFREY[3] who from a study of the experiences of cities in New York State during the past nine years concludes that to produce a definite effect upon the incidence of diphtheria it is not enough that children between 5 and 14 should attain a high degree of herd immunity. GODFREY cites examples to show that when the immunisation of 30 per cent. or more of children under 5 is superimposed "there is an immediate and definite decline in the current prevalence of diphtheria." He finds that in order to affect the diphtheria-rate favourably this critical proportion must be attained and sustained. In only two instances known to him has a community that had attained the 30 per cent. immunisation-rate of its under 5 age-group suffered even a moderate epidemic. He sees no reason to believe that immunisation *confined* to this group would be equally effective, and he also thinks it possible that immunisation of this group should be largely concentrated in sections of highest prevalence or—when it is not prevalent—in congested areas.

GODFREY suggests that the reason why immunisation of a small fraction of the under 5 group has a greater effect than immunisation of a large fraction of older children may be that atypical, larval cases, which are never diagnosed, exist in greatest numbers in this youngest group, and in this connexion he calls especial attention to the danger of an unrecognised case of nasal diphtheria. Although it is not definitely stated in his paper it seems from internal evidence that Schick tests were not, as a rule, carried out. Thus, in both the age-groups in question a number of children would be "immunised" who were in fact already immune. From what is known of the percentage of Schick-positive reactors in various age-groups in any community it is certain that immunisation course would be greatly enhanced if he were d to supervise all the conditions of health and ene. The question of expense may be crucial the moment. The committee asks for the rt to be read as representing its views of the s which *in normal financial conditions* would ppropriate for dealing with the defects revealed he course of its proceedings. It deprecates emeal treatment by such preliminary measures an be taken without incurring new expenditure. This may mean that no action can be looked for until the economic urge has passed. But no one who reads the report will be content to let matters remain as they are, and public opinion may insist on immediate improvement. At all events local authorities may decide to make fuller use of the powers they have, and should find their task lightened by magistrates who have read the report. Prudent parents will seek medical advice before sending their children to an unknown school.

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[1] Quart. Jour. Med., April, 1932, p. 213.

[2] Presse Méd., April 9th, p. 545.

[3] Amer. Jour. Pub. Health, March, 1932, p. 237.

ANNOTATIONS

AWARD TO PROF. THEOBALD SMITH.

HE Manson medal for tropical medical research, n triennially by the Royal Society of Tropical icine and Hygiene, has this year been awarded Dr. Theobald Smith, director emeritus of the artment of animal pathology of the Rockefeller itute of Medical Research. In association with orne in 1893, Theobald Smith showed that red-er fever in cattle was transmitted by ticks, and he same time demonstrated the passage of infection ugh the ova of one generation of ticks to the next. s discovery proved for the first time that a ozoal parasite of mammals could be disseminated the bite of a blood-sucking arthropod. Probably use Theobald Smith was dealing with a cattle er than a human disease this great event in the ory of medicine received scant recognition, though receded the better known work of Bruce on the smission of sleeping-sickness and that of Ross on aria. Furthermore, in 1893 Manson's hypothesis arding the mosquito transmission of *Filaria crofti* constituted only half the truth, since he ught man was infected via mosquito-contaminated er either by swallowing the escaped microfilariæ hrough their penetrating the skin of man. Indeed, as not until March, 1900, when Low demonstrated rial embryos in the proboscis of infected mosquitoes t to Manson from the younger Bancroft that the e mechanism of their entry during biting was lerstood. It is thus no over-statement of the case say that Theobald Smith was the first to transfer insect transmission theory of protozoal disease m the realms of hypothesis to those of established t. In 1904 Theobald Smith reported anaphylactic nptoms in dogs and rabbits, and in a letter to rlich wrote the original description of the classical aphylactic shock in guinea-pigs, often known as the eobald Smith phenomenon. In 1907 he proved at it was possible to immunise guinea-pigs actively the injection of a balanced mixture of diphtheria xin and antitoxin and two years later suggested ther investigations of the method with a view to ultimate application to human beings, thus antici-ting Behring and Park's work by several years.

The previous recipients of the Manson medal have en Sir David Bruce (1923), Senator Ettore rchiafava (1926), and Sir Ronald Ross (1929).

EREBRO-SPINAL FLUID IN CEREBRAL TUMOUR.

LUMBAR puncture has been followed by death in many cases of cerebral tumour that it is considered many to be an essentially dangerous operation that condition. And this is undoubtedly true less a careful technique is followed. F. Fremont nith[1] from a large experience concludes that when pillœdema is present the dangers of lumbar puncture more than counterbalance the information which is likely to be gained from it. In such cases puncture of one or both lateral ventricles is safer and more useful. When, on the other hand, there is no papillœdema, lumbar puncture is of great value. A fine needle with a manometric attachment is used, and the patient is kept in the horizontal position during and after the puncture. The pressure of the fluid is measured, and the absence of block at the foramen magnum and at the point of the needle is tested first by jugular and then by abdominal compression. Besides the usual examinations for colour, cells, and protein, a more detailed chemical examination may be made with the view of excluding uræmia, but usually only the minimum quantity required for the essential tests should be removed. With these precautions lumbar puncture is not dangerous in itself, and it may be of great service in indicating the presence and the degree of intracranial pressure. But when the patient has been dehydrated by cathartics or by the rectal administration of hypertonic saline, pressure readings are valueless. Normal readings may also be obtained with small tumours in the pituitary region, and with some infiltrating growths of the pons.

Ventricular puncture has a special value in that the fluid drawn from the ventricle on the side of the tumour may be yellow, and often contains appreciably more protein than that from the opposite ventricle. The combination of ventricular with lumbar puncture also has its uses in showing by manometric or colorimetric examination the degree of blockage between these two points on the cerebro-spinal fluid system. A block may be caused by tumour in the posterior fossa, by closure of the foramina round the fourth ventricle, or by a cerebellar pressure cone. While it may not always be possible to distinguish between these, there are cases in which combined puncture has a definite diagnostic value.

In a table attached to his paper, Fremont Smith gives many valuable hints on the differential diagnosis of cerebral tumours from other conditions by such complete examinations of the cerebro-spinal fluid. It would be impossible even to summarise these in a limited space, but they indicate the great number of questions which must be answered before we can make the diagnosis of cerebral tumour in the earlier stages. It is not yet generally recognised that a considerable proportion of patients with cerebral tumour die without having developed papillœdema, and even when this is present it is necessary to exclude other possible causes for it, of which the most important are sinus thrombosis and hydrocephalus. It is probable that ventricular puncture might solve some of the difficulties with which these cases are surrounded, but the difficulties and dangers of the operation are likely to delay its acceptance as a routine measure in obscure cases.

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[1] Arch. Neurol. and Psychiat., March, 1932, p. 691.

into negative reactors. Loewenstein's ointment which contains not only toxoid but a killed culture of diphtheria bacilli has been used upon a fairly considerable scale. Three inunctions of this ointment are made. The results, as Ramon and Debré abundantly show, are far inferior to those obtained by the injection of toxoid and may give rise to an entirely false sense of security. It is no good dallying, writes Dudley, with weak or diluted prophylactics if ever active immunisation is to eradicate diphtheria from the population at large. As a first essential, however, there must be effective propaganda and coördinated effort, in order that the public may realise, as it does whenever properly instructed, that at the cost of, at most, trifling discomfort to its children, the nation may rid itself of diphtheria with all the suffering, mortality, and expense which the endemicity of this disease imposes.

MEDICAL ENTRY TO PRIVATE SCHOOLS.

Eighteen months ago Sir Charles Trevelyan, then President of the Board of Education, set up a committee to consider what should be done to secure an adequate education under suitable conditions for children attending private schools. The report[1] as now published covers a wide ground, for the term "private school" is used as a convenient name to cover all schools not in receipt of grants from public funds, and the word "proprietor" for the person or persons responsible for them, though they may be the governing bodies of public schools, while the word "children" is not confined to pupils between 5 and 14. Thus construed the problem concerns some 10,000 schools with 400,000 scholars. A large proportion of these schools are excellent; in a few the conditions are seriously defective. Some of them already are inspected, and the Society of Medical Officers of Health urged on the committee that all private schools should be inspected and supervised at least as regards their premises and the general physical conditions. For the purpose of their evidence this society made special inquiries in selected areas with the following result:

> In about 25 per cent. of the cases investigated the schools were carried on under conditions "which can only be described as bad." The natural lighting of the class-rooms was generally sufficient but the desks were ill arranged in relation to the light. In a high proportion of cases the artificial lighting was defective. The ventilation was generally only that of the rooms in an ordinary dwelling-house, and without cross ventilation more cubic space and floor space per scholar were required. The desks were commonly of an obsolete or unsatisfactory pattern and in some schools forms without back rests were used. The great majority of the small schools paid little attention to the provision of proper cloakrooms and of facilities for drying outdoor garments. The closet accommodation was usually inadequate in comparison with the Board of Education standard and in the smaller schools it was rare to find separate closet accommodation for boys and girls. Facilities for washing were frequently lacking or consisted of a sink in the scullery. In one area two out of 10 schools inspected were seriously overcrowded, one having 34 children in a room 21 ft. by 13 ft., and another having 21 children in a room 14 ft. by 13 ft. In some schools there was no playground, in many others only a small backyard. As delicate children were apt to attend these schools the Society considered that the absence of facilities for open air exercise was particularly regrettable.
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> In another area a school medical officer who inspected three private schools chosen at random, found one fairly satisfactorily housed. A second containing six children was conducted apparently in a converted cellar, badly lighted and too small and overcrowded with furniture to accommodate the children. The third, established for 25 years, contained 20 children all taught in one bedroom measuring 13 ft. by 13 ft. There was no playground except the road.

The law as it stands gives power under the Education Act to prosecute a parent whose child is not receiving efficient instruction, and under the Public Health Act to secure abatement of nuisances on premises; but the mechanism is cumbersome and ineffective. The committee finds the remedy in a scheme of public supervision based upon inspection; to apply to all private schools with certain specified exceptions. Inspection would cover both the instruction and the premises, including the residential accommodation in boarding-schools, and the scheme would include power to compel the closure of schools failing to comply with the minimum requirements, the question of compliance to be determined ultimately by a court of law. The staff employed would be the ordinary inspectorate of the Board of Education or of the local education authorities. While regular medical inspection of children in private schools should be encouraged in every possible way, the committee does not recommend placing on proprietors a statutory obligation to provide such inspection. Boarding-schools however would be required to state on the registration form and in subsequent annual returns the name of the medical practitioner whose services are available in cases of sickness or injury. The nursing arrangements and the accommodation for such cases would be considered during the inspection of the school and dealt with in the inspector's report.

The report is excellent, but seems to us not to stress sufficiently the part which might be played by medical science. If a bench is asked to order the closure of a school on the ground that the conditions are prejudicial to the health of the children, the magistrates will certainly insist on having the evidence of a medical officer. Yet the report seems to contemplate that all the conditions of health should fall within the purview of the educational inspection. Medical inspection is to be encouraged but not made obligatory. If it were made a condition of registration that a medical practitioner should be attached to every school to supervise the health of the children, a big step forward would have been taken. It is true that official medical inspection might cause difficulties with some parents, but the objection would probably disappear if the examiner were a respected local practitioner, and exemption might be granted to children who brought a simple record of physical condition written out by the family doctor. Boarding-schools are to be required to name the doctor whose services are available in cases of sickness or injury, and the value of iir; if now aspiration be applied to the upper mber, bubbles of air will escape from the lower ., when the aspiration ceases, a corresponding ount of fluid will be drawn into the lower cavity; this process be repeated sufficiently, the cavity l be completely filled. To apply this process the sinuses, the patient lies on the back with head extended so that the chin is vertically over external auditory meatus, two cubic centimetres the fluid are introduced into one nostril and the er firmly closed, while the patient breathes ough the open mouth to raise the palate. Inter- tent suction is then applied for three minutes means of a rubber ball and a closely fitting nozzle, which Dr. Le Mée has added a manometer; the gative pressure should be equal to 180 mm. of rcury. The skiagrams are taken immediately an erect posture, and the method is of value in ealing thickening and abnormalities of the mucous mbrane as well as anatomical aberrations. The enoidal and posterior ethmoidal sinuses are more easily filled by this method but, in any us which is infected, occlusion of the ostium may vent entrance of the fluid; in the opinion of Mée and Bouchet, the non-entry of lipiodol shows it the sinus is severely affected and must be treated gically and, on the other hand, every sinus which mits the entrance of the fluid has a good prospect recovery and should not be submitted to operation, en though the usual rules would appear to indicate it. ey lay great stress on the value of this sign, which would be interesting to see confirmed in other arters. The time of evacuation of a sinus may o be studied by this method; according to these thors, half the liquid has normally disappeared 24 hours, two-thirds by the following day, and trace remains after four days. For treatment ey claim good results from a 1 per cent. solution argyrol; the method is very applicable to children whom the sinuses are small but their ostia large, d it is especially useful in the treatment of the sterior sinuses, which are the more easily reached, contradistinction to other methods by which ese cavities are particularly inaccessible.

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[1] H.M. Stationery Office. 1*s*. 6*d*.

HYSICAL SIGNS OF BUNDLE-BRANCH BLOCK.

IF there are physical signs of bundle-branch block hich may be elicited by ordinary clinical methods id without the aid of the electrocardiograph, these ill obviously be of value. Attempts have been iade to establish a connexion between this condi- on and certain signs discoverable at or near the ırdiac apex on inspection palpation and ausculta- on, but the relation can hardly yet be considered roved. Dr. Maurice Campbell and Dr. S. S. Suzman i our last issue reported the case of a patient with ypertension, paroxysmal dyspnœa, bundle-branch lock, and gallop rhythm. At a later date both the lock and the gallop rhythm had disappeared. lowever, both block of this type and gallop rhythm re common findings in a heart whose reserve is eriously impaired, and the two signs may occur ndependently of one another. They may arise rom a common cause—namely, the functional nsufficiency of the heart muscle. Moreover, the ommoner form of gallop rhythm is produced by he addition in early diastole of a third heart sound, vhile if bundle block be a cause of gallop rhythm ne would expect the third sound to be located in arly systole. In Campbell and Suzman's case the lectrocardiogram, taken after the disappearance of the characteristic bundle-block curve, presents changes which have been repeatedly observed to precede, and in the event of its disappearance, to succeed bundle-branch block. These consist of a well developed ventricular predominance, with a tall R wave and inverted T wave in lead I. This picture has usually been taken as indicating a severe degree of ventricular predominance, but from its frequent appearance as a stage in the development or recession of bundle-branch block, is considered by some to represent a mild grade of this form of block. J. T. King and D. McEachern [1] are of opinion that bundle-branch block can usually be recognised from physical signs. They find, in a series of 50 cases, a visible and palpable reduplication of the apex-beat in about 80 per cent. and a reduplication of the first sound in about 50 per cent. They have demonstrated a bifid apex-beat by photographing the movements of a straw attached to the apex directly on to a plate —a method which we owe to Parkinson—an electrocardiogram being taken at the same time. These tracings carry conviction, and it may be that with the cultivation of clinical technique a new sign of some value may be elicited by inspection and palpation of the cardiac apex.

MANIPULATIVE SURGERY.

THE medical profession on the whole is broad-minded and does not shrink from acquiring information from any source provided that source can produce scientific evidence for its contentions. The practices of bone-setters have aroused the enthusiasm of certain sections of the public, who are unwearied in twitting medical men for refusing to learn from them. But what the public does not wholly realise is that there exist within the ranks of the profession orthopædic surgeons who make a special and profound study of bone and joint diseases, who are well versed in the presumed mysteries of manipulative treatment and who, on account of their better training, more varied experience, wider outlook, and greater facilities do, in fact, practise bone-setting better and more safely than bone-setters themselves. The reason why, in spite of the existence of orthopædic specialists, unqualified practitioners continue to thrive, is because orthopædic surgery has only comparatively recently become recognised as an important specialty; so that a large proportion of general practitioners have not had the advantage of serving their apprenticeship in the orthopædic department of their teaching hospital during their student days. These practitioners are apt not to recognise cases that would benefit by manipulation, and the patients are obliged to take the treatment in their own hands, when they seek the advice of bone-setters, whose services can be advertised in the lay press in a way that is not open to registered doctors. The remedy for this state of affairs will come only when every student is obliged to serve as dresser in an orthopædic department before being allowed to sit for any qualifying examination. Practitioners who have missed this valuable experience need not, however, remain without expert guidance in this branch of orthopædics. Some seven years ago we had occasion to notice favourably a book on Manipulative Surgery, by Mr. Timbrell Fisher,[2] and on another page of this issue will be found an appreciation of a recent work by Mr. Blundell Bankart on the same subject. Such books are useful, for it is necessary to emphasise more strongly than has hitherto been done that orthopædics as a specialty is concerned not only with the prevention and

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[1] Amer. Jour. Med. Sci., April, 1932, p. 445.

[2] THE LANCET, 1925, ii., 1286.

THE WHITE BLOOD-CELL COUNT IN THE NEWLY BORN.

THE blood of new-born infants shows a high white cell count, chiefly accounted for by polymorphonuclear cells with a tendency to immaturity. A few days after birth the blood picture changes rapidly to the normal infantile count with a predominance of lymphocytes. Dr. W. Bayer,[1] assistant in Prof. Czerny's clinic in Berlin, has been looking for an explanation of the postnatal leucocytosis. Existing theories include such explanations as concentration of the blood in the first few days of life, the reaction of the organism to extra-uterine life, sudden loss of some regulating factor present in the maternal blood, endocrine disturbances at the time of birth, and the reaction of the infant to some tissue-injury brought about by birth trauma. Bayer examines these theories and finds them mostly inadequate. In his own investigations he first of all carried out a careful series of white cell counts on 20 normal new-born infants and confirmed the accepted view that polymorphonuclear cells amounted to 62 to 65 per cent. of the total white cell count on the first day of extra-uterine life, while by the third to fifth day the lymphocytic percentage had usually crept up to between 50 and 60 per cent. He next studied a series of infants delivered by Cæsarean section, paying special attention to those instances where labour had not begun and where there had been no preliminary interference of any sort. He showed that the white cell counts in this series were identical with those found in babies after normal labour. This fact eliminates several of the theories outlined above. Next he examined 11 infants who during birth showed either hæmorrhage into the skin or cephalhæmatoma or hæmorrhage from the alimentary canal. They all had white cell counts exactly similar, as regards the polymorphonuclear leucocytosis, to those of normal infants. One of the highest percentages of these cells found was in a baby which was asphyxiated at birth. In this case, too, there was a marked "shift to the left" and these facts are significant in view of certain later findings. Bayer proceeded to try to find out what it was that controlled the postnatal development of the white cells and what determined a myelogenous activity immediately before and after birth. A series of animal experiments with various hormones yielded almost uniformly negative results. Endocrine secretions were chosen which might be expected to be present in the maternal blood before birth such as Prolan (anterior pituitary), Unden (ovarian), Progynon (ovarian), placental extracts, and thymus extracts. Experiments on mice showed that the blood picture could not be altered in new-born animals by injecting these hormones either into the mothers or the offspring. Lastly he investigated the influence of carbon dioxide and oxygen on the blood picture and was able to prove that with an increase in the carbon dioxide content of the air breathed animals develop a polymorphonuclear leucocytosis with a "shift to the left" just as in the new-born child. He comes to the conclusion that this explains the phenomenon. He quotes various authorities regarding the oxygen content of the blood of the fœtus or new-born infant, and concludes that a deficiency of oxygen and an increase in the carbon dioxide is constant at this period of life. The fact that the child with asphyxia showed the blood picture in an extreme form bears out his theory.

Dr. Bayer's conclusion opens up many fields for speculation. Is it possible, he asks, in effect, that a chemical stimulus in the blood is the cause of leucocytosis in other conditions? What, for example, is the relationship of blood oxygen and blood carbon dioxide in leukæmia?

OVERCROWDED BIRMINGHAM INSTITUTIONS.

MANY public assistance areas have inherited costly problems from the old boards of guardians, but few of them are so serious as that which faces the great county borough of Birmingham. Infirmaries and mental hospitals lack satisfactory classification of inmates, and several of them are overcrowded. The work of redistribution had been begun by the guardians, but was far from complete when they were superseded. The *city council is, therefore,* called upon to complete this by no means easy task, and according to a comprehensive report by Dr. H. P. Newsholme, the medical officer, it will cost over £192,000. This is an alarming figure just now, even for Birmingham, especially since Dr. Newsholme assures the council that the matter is of immediate importance. Nor is it easy to question such urgency when he points out that in three of the institutions there is a serious degree of overcrowding, and that much inconvenience results from imperfect classification. Pressure upon space is not the only difficulty that has to be removed; the administrative problems involved in a mixture of different classes of patients are, or may be, acute. At Erdington House, for instance, two-thirds of the 1772 inmates are mental patients of different classifications. Only about 10 per cent. are certified as insane, and less than 20 per cent. as mentally deficient. Who is to control such an institution? The mental hospitals committee is entitled only to deal with patients under the Lunacy Acts, and the Mental Deficiency Acts committee only with the deficient. The proposed comprehensive scheme of reclassification would enable every type of inmate to be housed in a more satisfactory way and, with the help of extensions, would bring together in one institution classes of patients now scattered through two or three. Order would thus replace disorder, and administration be simplified. The *report has been approved,* but nothing will actually be done until the committees concerned ask for the authority of the council to spend the money. There is, moreover, another and an important preliminary. Under the Local Government Act of 1929 the proposals must be submitted to the local hospitals council, which may, perhaps, be concerned to find that while the scheme facilitates transfer it provides no accommodation for additional patients.

DISPLACEMENT METHOD IN NASAL SINUSITIS.

THIS method of introducing fluids into the nasal sinuses was elaborated by A.-W. Proetz and, being easy, harmless, and painless, possesses obvious advantages over methods of injection by means of a cannula or trocar. It is used principally to fill the sinuses with lipiodol before skiagraphy, but may also be employed for the introduction of medicaments. Drs. J.-M. Le Mée and M. Bouchet[1] describe its technique and uses from their experience at the Necker-Enfants-Malades Hospital. The physical principle of the method is this: if a test-tube is divided by a narrow constriction into two chambers, and the upper one filled with fluid, the liquid will not penetrate into the lower by reason of its content

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[1] Jahrb. f. Kinderh., 1932, cxxxiv., 304.

[1] Presse Médicale, March 12th, p. 393.

THE HUGHLINGS JACKSON MEMORIAL MEDAL.

ON May 19th, the occasion being the annual eting of the Section of Neurology of the Royal ciety of Medicine, a gold medal and an honorarium 100 guineas will be formally presented to Sir arles Sherrington, F.R.S., the Hughlings Jackson turer for 1931. The medal, of which the obverse reproduced here, was designed by Mr. Percy Metcalfe from a photograph published in *Brain* in 1906. The ceremony marks the completion of the task undertaken early last year, on the initiative of Mr. Leslie Paton, of collecting a memorial fund to endow this lectureship, which is held every ree years. Dr. Wilfred Harris became the energetic asurer of the fund, and the required sum of £1200 is collected from 146 subscribers at home and road. Dr. Harris has added to the interest of the remony by preparing a pamphlet in which he gives me account of Jackson and his times, and of the velopment of journals and societies devoted to the udy of neurology. Hughlings Jackson was one of e four original editors of *Brain*, which was started 1875 as an independent journal. Twelve years ter it became the journal of the recently formed eurological Society of London, and the association ntinued until 1907, when this society, which had ready enlarged its title and scope, amalgamated ith others to form the Royal Society of Medicine. *rain* then resumed an independent existence. The ost attractive feature of the pamphlet is the vivid scription of Hughlings Jackson, under whom Dr. arris served as house physician at the National ospital in 1896. "A gentle soul, unbelievably odest, with a fund of quiet humour," Jackson took exercise, nor cared for outdoor sports, but liked tective stories. Many will sympathise with his ply to Jonathan Hutchinson's effort to get him way from one for a walk on a "beautiful day" in inter. "It's a beautiful day by the fire," said ackson, as he settled closer in his easy chair. ackson, who died in 1911, had never published any mprehensive text-book on neurology, but was a rolific writer of essays and papers, some of which ave recently been collected by Dr. James Taylor nto two volumes of "Selected Writings." The ctureship was founded in 1897, when Hughlings ackson himself inaugurated it in an address on the lations of different divisions of the central nervous ystem, which was published in full in THE LANCET 1898, i., 79). It is proper that a lectureship "in onour of the discoverer of cortical epilepsy and its elation to cerebral localisation" should be suitably ndowed, and that the first recipient of the medal should be one who has done so much to elucidate the physiology of the central nervous system.

UGHLINGS JACKSON MEMORIAL MEDAL.

THE MEDICAL ANNUAL.

WITH the 1932 volume[1] the Medical Annual has attained its fiftieth year of issue, and the jubilee number contains a list of contributors, totalling 201, from 1884 to 1932, with their portraits. The Annual was started in London, but two years later was transferred to its present publisher in Bristol and came under the editorship of the late Dr. Percy Wilde, whose vigorous and inquiring mind gave the Annual a spirit of enterprise which it has never since lacked. The present joint editors, Dr. Carey Coombs and Mr. Rendle Short, speak of Wilde's devotion as almost fanatical in its fervour, the production of the Annual offering him an opportunity of service to the medical profession and to humanity which was welcomed both by himself and by Mr. Hartland Wright, a partner in Messrs. John Wright and Sons, who is still living in retirement. The Annual has been generally regarded as a work of reference, although once or twice in its preface has appeared the suggestion, true no doubt but difficult to realise, that the purchaser would do well to read the volume from beginning to end. To make reference easier there have appeared a series of synoptical indexes with special headings for remedies and diseases, giving the practitioner a rapid means of acquainting himself with essential points and to some extent a connected story of the progress of treatment over a period of years. The jubilee volume differs only from its predecessors in being rather larger than usual, due to illustrations, though these have always been a strong feature. There are contributions on veterinary surgery, as the editors believe that both human and veterinary medicine will gain from a wider knowledge of both spheres of work. For practitioners overseas and in rural practice has been inserted some detailed discussion of the causes and treatment of dental pain. In every department of medicine the review of the year's work has been kept up to date. The supplement contains an index of new inventions and preparations, a list of books of the year, and a useful directory of sanatoriums, spas, nursing homes, and other institutions.

THE USE OF MAGGOTS IN INFECTED WOUNDS.

FROM time to time it has been noticed that wounds contaminated with maggots have shown rapid healing. This observation was again made by W. S. Baer during the late war, and ten years later by animal and clinical investigation he attempted to put the use of maggots on a scientific basis as a method of treatment.[2] S. K. Livingston,[3] who formerly worked with Baer, has continued his inquiries, and relates how by means of an incubator he breeds the flies continuously during summer and winter. The eggs are sterilised in perchloride of mercury and alcohol, and are then placed on sterile agar and beef slopes in test-tubes where the maggots hatch out, the latter are also bathed in the antiseptic solution before use. Of 100 cases treated, 90 of which were cases of chronic pyogenic osteomyelitis, 95 per cent. healed. In a second paper Livingston with L. H. Prince[4] describe a series of 200 cases in adults, the correction of deformities, but also with the art and practice of moving joints for therapeutic purposes. Orthopædic surgeons have acquired, in addition to manipulative skill, a training in differential diagnosis founded on a knowledge of general as well as regional pathology, and a patient who seeks help from a qualified man has all the resources of surgery at his disposal should manipulation be deemed unsuitable, or be unsuccessful in effecting a cure.

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[1] The Medical Annual: A Year Book of Treatment and Practitioner's Index. Fiftieth Year, 1932. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Ltd. Pp. 674. 20s.

[2] See THE LANCET, 1930, ii., 1301; 1931, i., 280.

[3] Surg., Gyn., and Obst., April, 1932, p. 702.

[4] Jour. Amer. Med. Assoc., April 2nd, p. 1143.

A ROOM OF ONE'S OWN.

THE London County Council are developing a nursing service which already includes between 9000 and 10,000 women, and is likely to grow even larger in the future. Among the advantages offered to an entrant to this service are that, within its bounds—that is, without loss of pension rights—experience may be gained in practically any branch of nursing, except perhaps private nursing, and that it is a definite policy of the Council to encourage interchange and promotion between various hospitals and departments. Moreover, a uniform scale of salaries has been devised; the hours of work have been reduced to 56 a week day duty, including a period for lectures, and the aim is to reduce them to 54 a week as soon as practicable; and one weekly rest day in seven is assured. In some of the L.C.C. hospitals the trained staff nurse who prefers to live out has an opportunity of doing so, her initial salary of £65 a year, including board while on duty, being supplemented by a living-out allowance of £90; sisters receive an initial salary of £90, including board while on duty, with non-resident allowance of £130. THE LANCET Commission on Nursing recorded evidence that the innovation was regarded as most successful by the authorities, and we learn that 500 of the trained nursing staff now live out. It is patently the aim of the Council to provide a standard of teaching, accommodation, personal freedom, and amenities which compares favourably with that provided at most voluntary hospitals. The immense task of coördinating the practice at seventy-odd hospitals, some of which fell under the administration of the central public health committee of the Council only two years ago, has been tackled with great vigour, and it was inevitable that inequalities should continue to exist for a time. Accommodation has been one of the most difficult problems, since in the interests of the patients and of the nurses themselves it was decided to enlist the services of 500 extra nurses and probationers. An illustrated pamphlet, issued early last year in order to stimulate recruitment, contained the statement that "the L.C.C. nurse has, from her first day as probationer, a comfortably furnished room of her own." It was evidently the intention of the Council that this should be true before the pamphlet was issued, but though 3664 probationers (81 per cent.) do have single rooms, 215 still occupy wooden cubicles, 92 curtain cubicles, and 529 share a bedroom. Following a complaint by a probationer, who left a hospital after only four days, Miss Esther Rickards, F.R.C.S., drew the attention of the Council to the inaccuracy of the pamphlet in this respect, and it has now been withdrawn. The protests from nurses which her action has aroused have been unmerited. At a meeting of the London and National Society for Women's Service held on May 5th to discuss the Final Report of THE LANCET Commission on Nursing, Miss Rickards took an opportunity of disclaiming any intention to do harm to the nursing service of the L.C.C., for which she had a great admiration. The resentment expressed in a letter from the nursing staff of the hospital in question to the chairman of the central public health committee of the L.C.C. is a good example of the attitude of nurses already acclimatised to the aspirations of newcomers, which may sometimes stand in the way of desirable reforms. Some of them, so they say, preferred curtained cubicles to private rooms, were loth to leave them, and so forth. All this, and the fact that the probationer did not remain in the hospital long enough to appreciate the many advantages offered, are irrelevant. The accommodation supplied was not that promised, and the chief lesson to be learnt from the episode is the danger of premature propaganda.

THE VEGETATIVE NERVOUS CENTRES.

THE possible situation of the centres controlling vegetative activities—to which we referred on April 16th—is considered in greater detail by E. A. Spiegel[1] and by J. Beattie.[2] Spiegel indicates the difficulties encountered in attempting experimentally to demonstrate a functional rapport between a given organ and any definite area in the brain. The chief difficulty lies in the fact that visceral, as opposed to somatic, activity is largely independent of central nervous control and is normally a matter of more local reflexes. Consequently, experimental lesions of the afferent or efferent nervous connexions of the viscera rarely produce dramatic changes in function. Even when changes do take place it is not easy to be sure that they are not indirect consequences of altered activity of the endocrine glands. Spiegel also points out that the various vegetative nuclei are by no means sharply distinct from one another. He concedes, however, that the hypothalamics may be divided into two parts, the one controlling the pituitary gland, the other supplying the viscera via the spinal cord. Beattie, on the other hand, is more explicit. He recognised three anatomical subdivisions of the vegetative centre: an anterior or supra-optic nucleus, situated directly above the optic chiasma and bounded in front by the anterior commissure and behind by the pituitary stalk; the intermediate tuber cinereum surrounding like a collar the infundibular recess; and a posterior nucleus spread out over the lateral wall of the third ventricle behind the middle commissure and extending downwards to the mamillary body. Of these nuclei he believes that the posterior controls sympathetic and the anterior parasympathetic activities. In addition to the connexions mentioned above, the nuclei receive afferent fibres from the olfactory areas and the optic thalamus, and send efferent fibres to the intermediate and posterior lobes of the pituitary gland. The close functional relationship between the latter gland and the hypothalamus (the "neuro-hypophyseal mechanism" of Cushing) is also illustrated by the observation of Popa and Fielding[3] that a part of the blood draining the pituitary is diverted, as a "portal" network, to irrigate the adjacent hypothalamus.

The charting of the hypothalamus and the assessment of its rôle in metabolic and visceral activity form a problem of considerable importance. Its solution should entail a coöperation between the neurologist and the "internist" (to borrow a useful American term) which should be to the advantage of both.

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[1] Bull. Johns Hopkins Hosp., April, 1932, p. 237.

[2] Canad. Med. Assoc. Jour., April, 1932, p. 400.

[3] Jour. Anat., 1930, lxv., 88.

SPECIAL ARTICLES

EXPERIMENTALLY PRODUCED MALARIA.

ALTHOUGH malaria is by far the most common disease in the tropics, if not the most widespread pestilence of mankind, it is only during recent years that really accurate knowledge of it, based on controlled experiments, has been obtained. For the fullest account of experimental malignant tertian malaria that has yet appeared we are indebted especially to the efforts of Colonel S. P. James, F.R.S., and his colleagues at Horton Mental Hospital, Epsom. Their latest work was described in a paper by Colonel James, Dr. W. D. Nicol, and Mr. P. G. Shute, read before the Section of Tropical Diseases of the Royal Society of Medicine, on May 5th.

For the treatment of general paralysis it was at first the practice to use strains of the benign tertian or quartan parasite and, on account of the supposed risks, artificial inoculation with *Plasmodium falciparum* was avoided. At Horton, as experience increased and laboratory organisation developed, it became possible, however, to safeguard against these risks, and from August, 1927, malariotherapy with *P. falciparum* was tentatively used for patients who had not greatly benefited from a course induced by one or other of the "benign" parasites. Since no untoward events followed in the first series of cases, the trial was gradually extended to include patients not previously infected with any form of malaria. Although in the first 22 cases there were two fatalities during or shortly after the malarial course, more than 50 have since been treated without a death, so that the death-rate attributable to a malaria course with *P. falciparum* at Horton is only 4 per cent.—i.e., less than half that of treatment with the benign tertian parasite in mental hospitals in England and Wales (10–14 per cent.).

Eight strains of the parasite were used, two from India, three from Rome, one from Sardinia, and two from West Africa. Some patients were infected by blood inoculation, others by the bites of mosquitoes, while two developed the fever some ten days after being injected intravenously with sporozoites from the salivary glands of infected mosquitoes.

The important question is now raised as to whether there is more than one species of the malignant (crescent-forming) parasite, for Colonel James and his colleagues have found within the same species various geographical races which, while not morphologically different, can be recognised as distinct by their clinical virulence, immunological reactions, and other biological properties. The most virulent infections appeared to be those caused by strains from Rome and Sardinia; moreover, it proved possible to reinfect patients with these strains after they had been rendered immune to strains of Indian origin. A still more significant fact is that English *Anopheles maculipennis* could not be infected by Indian strains of *P. falciparum*, whereas it was quite easy to infect them with European strains from Rome and Sardinia.

The actual artificial reproduction of blackwater fever under these experimental conditions must be adjudged a clinical observation of the first importance. Two patients infected with the Rome-Sardinia strains developed blackwater fever, while a third very nearly did so. No occurrence of this sort was noted with the Indian strain. Very conclusive evidence was also obtained that quinine was the exciting cause of the blackwater attacks, and at the same time it was noted that the severity of the repeated relapses preceding the actual attack was to be considered the antecedent cause.

CHARACTERISTICS OF MALIGNANT TERTIAN INFECTION.

The investigations have included an analysis of the temperature curve during each febrile paroxysm, and they confirm the classical observations of Marchiafava and Bignami as to the existence of definite febrile paroxysm giving a characteristic temperature curve generally exceeding 24, and often lasting 36 or 40 hours. Colonel James and Dr. Nicol see no reason to suppose that there is a form of this parasite which completes its asexual cycle in 24 hours, and therefore produces a malignant quotidian type of fever. And in this matter they have had the advantage, not enjoyed by previous workers, of working with patients who have never before been infected with malignant malaria and who have remained under observation continuously for a year or more.

The general course of the disease in malignant malaria is deduced from a study of 25 cases under continuous observation for over a year after the primary attack, so that it has been possible to summarise the differences between this and the benign tertian. The main points of distinction are as follows: Although in most cases of malignant tertian malaria the infection ceases to recrudesce within two months of recovery from the primary attack, it sometimes continues to do so for a longer period; thus the period of recrudescences merges, without a well-defined break, into what is called in benign tertian malaria "the period of relapse." But Colonel James definitely states that, although some of the seven mosquito-infected patients under observation for over a year since their recovery from the primary attack had many recrudescences during the first six months, none subsequently showed a relapse or recurrence such as is common in benign tertian malaria. Malignant tertian malaria also differs in that no apparent difference can be detected between the disease caused by direct blood inoculation and that produced by the bites of infected mosquitoes. Moreover, quinine treatment of the primary attack brings about a permanent cure in less than 20 per cent. of cases of malignant tertian malaria as compared with 50 per cent. for the benign tertian. Clinically, malignant tertian malaria is an acute disease consisting of a severe primary attack followed by several less severe recrudescences at relatively short intervals, and in this respect it differs from the benign tertian which is essentially a chronic disease. The difference is so marked that it can be said definitely that only in the primary attack is there a grave risk of pernicious symptoms; but it must be understood that in this statement blackwater fever is excluded, for this is a manifestation not associated with abundance of parasites and their active sporulation, as are the other pernicious complications. The parasitic infestation is greatest in the primary attack but also diminishes in each recrudescence.

TREATMENT.

The following conditions have been found to influence the therapeutic effect of quinine on the clinical and parasitological course of malaria: the first 100 apparently being those already mentioned. The second 100 cases consisted of chronic infective bone conditions, and healing was obtained in 88 per cent. A third paper, by E. H. Wilson, C. A. Doan, and D. F. Miller,[5] deals with 26 cases of osteomyelitis, in 19 adults and 7 children, and includes one case of acute osteomyelitis; healing was obtained in 22 cases. It must be pointed out that the maggot treatment is preceded by a radical sequestrectomy with the institution of free drainage and the use of vaccine during treatment. The wound is packed for 48 hours after the operation, and then the maggots are introduced; redressing is required every third to fifth day with the introduction of fresh maggots. Unless drainage is free the maggots may be drowned in the pus. As to the mode of action there are said to be various factors—namely, the ingestion of bacteria and necrotic material, stimulation of the outpouring of blood-serum and the production of an "active principle," which can be obtained by grinding live maggots in sterile saline solution and filtering through Berkefeld filters. *Livingston and Prince* use this active principle for dressing when the wound has been cleaned up by maggots; they are now also using this substance combined with vaccine therapy in the treatment of chronic leg ulcers, sinus and mastoid infections, and middle-ear disease.

STRUCTURE OF ATOMIC NUCLEI.

At a meeting of the Royal Society held on April 28th Lord Rutherford gave a masterly review of the physics of the atomic nucleus on which light has recently been thrown by work done under his direction at the Cavendish Laboratories in Cambridge. The picture of an atomic nucleus generally accepted to-day is a massive aggregate or group of alpha particles with a few free electrons and protons. The alpha particle is a helium atom carrying a positive charge, whilst the more familiar electron is the minute unit of negative electricity. The proton is the name given to the nucleus of the hydrogen atom which is a positive charge having a mass of unity in the atomic number scale. The nucleus is surrounded and held together by a barrier of high positive potential which implies an intense field of electrical force. But these simple mechanical concepts are regarded to-day only as useful simplifications for further research. When the model fails to explain all the observed facts, it does not mean that it is forthwith scrapped. The lesson of relativity and wave mechanics has been one of humility. Physicists no longer demand that a theory shall fit everywhere. So long as it holds over even a limited range it is too valuable to abandon. Lord Rutherford emphasised this in his use of the word picture. The barrier of positive potential is so efficient that any particle must have a high velocity in order to penetrate or shatter the atomic nucleus. Conversely any escaping particles, as for example, the alpha and beta radiation of the spontaneously decomposing radio-active elements, must also have a high velocity to penetrate this barrier. In general two lines of attack on the problem of the nucleus may be distinguished. There is first the method of penetrating the nucleus by an atomic projectile. Secondly, there is the study of what comes out, either as particles or as radiation, and the deduction from such *observations* of the nature of the source. Examination of the band spectra of the lighter elements has yielded evidence in the nucleus of what has been termed spin. The experiments involve the analysis of the fine detail in the spectra, and mathematical treatment of the series of frequencies found. In the method of nuclear penetration by rapidly moving particles there *exists one great experimental difficulty* which is inherent in the actual structure of matter. About 12 years ago Lord Rutherford bombarded nitrogen with high speed alpha particles. He obtained definite evidence that when a nitrogen nucleus was hit the atom was disrupted. To obtain this result a very large number of alpha particles was needed, as the number of direct hits was very small compared with the misses. This is due to the open structure of the atom. The nucleus is surrounded by its attendant electrons, which revolve at what is relatively a large distance, so that there is ample room for the flying particle to miss the target of the minute nucleus. The bombardment must therefore be in the nature of a general barrage, since aiming of atomic bullets is out of the question.

In his address Lord Rutherford made a preliminary *announcement of the results obtained* at Cambridge by J. D. Cockcroft and E. T. S. Walton by a new development of this method. The projectiles used were in this case protons, obtained from an electrical discharge through hydrogen and driven by a potential of 200,000 to 800,000 volts. This high positive potential acts on the positive charge of each proton, giving it a velocity of above 10^9 cm. per second. The jet of protons was allowed to fall on a plate of lithium inclined at an angle of 45°, when it was found that alpha particles began to be shot off from the lithium after the velocity exceeded a certain value. The alpha particles were detected by the tiny flash of light produced on striking a screen of willimite. Their number could be ascertained by a form of the Geiger counter. The explanation given of the effect was that each flash represented the explosion of a lithium atom of mass 7 hit by a proton of mass 1, the result being apparently the production of two alpha particles of mass 4. Other elements are now being examined by this method. This is, of course, not the first time the atom has been split, as the original work of Rutherford has the prior claim to that distinction. At the same meeting J. Chadwick described the steps which led him to identify the existence of the neutron, whose particles carry no effective charge, but have a mass of about unity. They are composed, it is believed, of a proton and electron in such close association that no external field is to be detected. A moving neutron does not produce ions as it flies unless a direct hit is registered. The discovery of the projection of the neutron from the atom of beryllium on bombardment is due to Mme. Curie-Joliot and M. Joliot, and has afforded not only new evidence of the nuclear structure, but has given a new experimental weapon for further research. Dr. Chadwick showed the tracks of the atomic disturbances produced by the impact of a neutron, the photographs being obtained by producing the collisions in a gas super-saturated with moisture, when the water condenses on the ions produced and shows as a track of minute droplets. It is a matter for a justifiable national pride that in all this work the Cavendish Laboratories may be said to have set the pace.

Dr. James Collier will deliver the Morison lectures before the Royal College of Physicians of Edinburgh, at 5 P.M., on Monday, Tuesday, and Wednesday, May 23rd to 25th. His subject will be the Pathology and Clinical Features of Some Types of Peripheral Neuritis.

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[5] Jour. Amer. Med. Assoc., April 2nd, p. 1149.

nd has established a very exacting system of examination and record. His last report points out that diagnosis he has often experienced difficulty ecause of the inadequency or inaccuracy of the istory given on the schedules sent in by the applicants r their guardians. Many of the medical men who ll up the medical part of the schedules have never ad an opportunity of treating the cases in the early tages, and therefore depended on hearsay. Even n expert ophthalmic surgeon may be at a loss to lassify correctly the original state, and primary nd secondary causes which might have reduced an ye, or a pair of eyes, to the state of disorganisation n which they came seeking for blind benefits.

Dr. Mackay has lived through the whole period luring which the treatment of eyesight has passed rom pure empiricism to systematic examination in nstitutions. So far back as 1890, in a public lecture he urged the desirability of inquiring into the physical ondition of every school-child, including the state of the eyes and eyesight. His suggestion appeared at the time somewhat Utopian, and it was not until 1904 that the first systematic examination of the yesight of school-children in Edinburgh was undertaken by his clinical assistant at the request of the nvestigator appointed by the Royal Commission on Physical Training (Scotland). In 1908 the Education (Scotland) Act of that year empowered the Scottish Education Department to require local education authorities to make a medical examination of school-children. The eye clinic of the Edinburgh school board was started in 1912. Still later, the introduction of schemes for maternity and child welfare had assured the early recognition of defective eyesight in very young children. And now the latest development of all has come about by the establishment of clinics, officered by expert ophthalmic surgeons, through whose certificates alone the benefits of the Blind Persons Act, 1920, can be obtained. Dr. Mackay has had a hand in these and other movements, and the Scottish administrators have appreciated to the full the value of his services.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

SUGGESTED TAX ON THE SWEEPSTAKES.

ACCORDING to newspaper reports, in advance of the introduction of the Budget of the Irish Free State, it is expected that the Minister for Finance will make a raid on the sweepstakes. A special tax —some say 5 per cent., others 10 or even 15 per cent.—is to be put on the total receipts for tickets. If one may regard the figures for 1931 as representative, a tax of 5 per cent. on total receipts would bring to the national exchequer some £450,000. It is believed by those interested in the success of the sweepstakes that a tax of this kind—whatever percentage might be fixed—would have a very depressing effect on the sale of tickets. Foreign purchasers, and they have always been the majority, would, it is thought, resent being asked to pay Irish taxes, however willing they may have been to contribute to the relief of Irish charities. It is thought by many that the hospitals would benefit more if the Government were to content themselves with removing the present exemption from income-tax enjoyed by the hospitals in regard to the sums they receive from the sweepstakes, and drop the proposal of a direct tax.

INCOME-TAX ASSESSMENT ON A HOSPITAL.

An important decision was given by the High Court of the Irish Free State (Mr. Justice Sullivan, Mr. Justice Hanna, and Mr. Justice O'Byrne) last week on an appeal taken by the inspector of taxes against a decision of the Special Commissioners of income-tax in a case in which the inspector claimed that the profits arising from private nursing homes attached to a public hospital were liable to income-tax. The superioress of the Mater Misericordiæ Hospital, a public charitable institution, carried on in association with the hospital certain nursing homes in which patients are received for payment. She contended that they constituted an institution, that there was no such institution as the Mater Private Nursing Homes, that the hospital was not carried on on commercial lines, but on lines that rendered it impossible to make a profit; that a charitable institution was exempt from income-tax. The inspector contended that while the public hospital as a charitable institution was exempt, annual profits arose from the carrying on of private nursing homes, and that the superioress was properly chargeable with income-tax upon such annual profits. The Special Commissioners had found that the hospital was carried on as one undertaking, that no line of demarcation could be drawn between the profitable and the non-profitable part of the activities of the hospital, and they concluded that the superioress was not carrying on a trade, and that the assessment should be discharged. The High Court gave judgment in favour of the appellant, the inspector of taxes, and against the superioress of the hospital. The Court held that the Special Commissioners had misdirected themselves in law in holding that the concern was run as an undertaking, and that there was no financial demarcation between the profitables and the unprofitables. The proper question for the Commissioners to determine was whether the superioress did habitually during the tax year let for hire the rooms and beds, with private accommodation, board, nursing, and, in some cases, medical and surgical attendance. If the answer was in the affirmative, then she carried on a trade in the meaning of the Income-tax Acts. The case must be remitted to the Special Commissioners, each party to bear its own costs.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

THE assassination of the President has plunged France into gloom: M. Paul Doumer was a strong calm man, whose wide knowledge of affairs will be particularly missed at this juncture.

SICKNESS INSURANCE AND DEATH-RATES.

Sickness insurance has only just been started in France as a whole. But the Departments recovered from Germany have enjoyed its benefits for about half a century. A comparison between the death-rates in these Departments and those in the rest of France should therefore give a rough idea of the value of such insurance. This task has just been undertaken by Dr. Mosser, of Mulhouse. In the *Revue Philanthropique* for April 15th, he refers to an earlier study in which he showed that in the period 1911–21, the death-rate for Alsace and Lorraine was 156 per 10,000 inhabitants, whereas for the whole of France it was 187. In a more mode and dose of infection, the natural susceptibility and resistance to malaria of the patient, the degree of tolerance or "immunity" to malaria which he has acquired before treatment, the species of parasite, and the virulence of the particular geographical race. The conclusion is reached that the usual clinical practice of administering quinine in malignant tertian malaria may not always be in the best interests of the patient. It is often stated that malignant malaria is easier to treat in hospitals in England than in the tropics, but this is because the fever here represents a recrudescence and not a primary attack, so that the patient has already acquired a certain amount of immunity to this particular infection. The failure of Colonel James and his colleagues to get good results with the "Sinton treatment" (quinine plus alkali) is probably also due to the same cause. From the point of view of economy, the importance of prescribing a separate system for each parasite rather than a standard system applicable to all has become much greater since the discovery of *Plasmodium ovale*. Even in primary infections with this parasite the tendency to spontaneous recovery is so marked that it is hardly ever necessary to give more than two small doses of quinine. The new observations on the individuality of different strains of the same species of parasite introduces a new difficulty in the chemotherapeutic tests. A report of highly successful results with new antimalarial preparations would be valueless, unless it were shown that the cases could not be so successfully cured by a few small doses of quinine. From all the information obtained one is apparently justified in withholding quinine for a short period in order to ascertain by frequent blood examinations and clinical investigations whether the parasitic infestation and signs and symptoms are diminishing "spontaneously" or becoming more pronounced.

Colonel James and Dr. Nicol think that the curative effect of Atebrin[1] is very remarkable and that its discovery marks a new epoch in the therapeutics of malignant tertian malaria. This statement is especially significant when it is understood that the experiments were arranged with the view of eliminating errors in chemotherapeutic trials caused by the influences already described. The first trials were made on four cases of malignant tertian malaria which had continued to relapse for more than six months after their primary attacks, and also on patients who were not cured by quinine treatment during the primary fever. The dose of atebrin was 0·3 g. daily (in tablets) for five days. In only one of the 17 cases treated with atebrin did the remedy fail to effect what appears to be a permanent cure.

The action of atebrin, as has already been stated, seems in many ways to be the reverse of that of plasmoquine, for it appears that atebrin will be of little use as a malaria prophylactic.

It is fitting that an interesting instance of plasmoquine prophylaxis should be recorded in the case of Mr. J. Y. Brown, European inspector of the public health department of Nigeria, who in bringing home to England a batch of *Anopheles gambiæ* heavily infected with the sporozoites of malignant tertian malaria, allowed these insects to feed frequently on his own blood whilst taking 0·06 g. of plasmoquine daily as a prophylactic, and the same dose daily for eight days after the last occasion on which he was bitten. Though the patients injected with the sporozoites developed acute malignant tertian malaria, Mr. Brown has remained in his usual good health for more than three months after the last occasion on which he was bitten.

There is little doubt that the facts recorded above mark an advance in our knowledge of this most intricate subject, and fully justify the pains that Colonel James and his colleagues are taking.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

EDINBURGH HOSPITALS SCHEME.

By 41 votes to 13, the Edinburgh hospitals scheme for paying patients has been approved. It is expected that there will be a revenue of £6000 per annum in respect of the three hospitals concerned—Pilton, Craigleith, and Seafield. The convener of the public health committee indicated that no case would be turned away on account of inability to pay, but if anyone responsible for the patient could pay, he would be required to do so. The amount would depend upon the circumstances of the case and might, for example, be as low as 2*s*. 6*d*. a week. This would not be a profit basis. She quoted many instances outside the poor-law where a charge was made for the services given by the corporation—such as baths, washhouses, bowling-greens, and golf courses. The charge made in these cases was not an economic or commercial charge, and the same thing would hold for the municipal hospitals. The scheme would undoubtedly throw a considerable burden on the rates, and the charge made—except to other local authorities for their patients—would in no sense represent the money value of the services, maintenance, and treatment, which the patients would receive. There was a proposal that treatment should be free all round, but the vote was as above. It is assumed that the scheme is now ready for submission to the Department of Health.

NEUROSYPHILIS.

Before the Edinburgh Medical Chirurgical Society on May 4th Dr. David Lees, assisted by Mr. Robert Lees, gave an analysis of 613 cases of neurosyphilis encountered at the Edinburgh clinic during the 12 years of its work. They represent about 4·6 per cent. of the total of some 14,000 cases treated. The proportions of the different varieties are very striking, the percentages of incidence being as follows. Tabes: males, 55·8; females, 47·9. G.P.I.: males, 19·5; females, 19·5. Tabo-paresis: males, 8·6; females, 2·4. Vascular: males, 5·6; females, 6·5. Meningo-vascular: males, 7·4; females, 6·5. Latent cerebro-spinal syphilis: males, 2; females, 13. Gumma: males, 1·2; females, 0·0. Eighth nerve paralysis: males, 0·0; females, 0·0. Optic atrophy: males, 0·0; females, 4·1. For congenital cases, without distinction of sex, the percentages in the same sequence were 26·6, 31·4, 31·8, 1·9, 10·5, 8·5, 0·9, 12·4, 3·8. Of the total 613 cases, males were 55·6 per cent.; females, 27·6; "congenitals," 17·1.

The most striking features are the high percentage of tabes both in males and in females. Contrary to expectation, the incidence of G.P.I. in this series is the same in females as in males; the ratio usually given is nine males to two females. In congenital syphilis there was a high percentage (12·4) for eighth nerve paralysis. Optic atrophy yielded 4·1 per cent. for females and 3·8 per cent. for congenitals. Discussing the question whether early treatment adversely affected the incidence (later) of neurosyphilis Dr. Lees concluded that it did not.

WORK FOR THE BLIND.

Dr. George Mackay has been for 31 years oculist to the Edinburgh Asylum and School for the Blind

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[1] See THE LANCET, April 9th, p. 796; April 16th, pp. 826, 847.

PANEL AND CONTRACT PRACTICE

Another State of Mind.

We recently commented on the state of mind of the insured persons in demanding what they consider to be their rights. It is relevant also to consider the state of mind of the insurance practitioner who has the responsibility of refusing or granting these demands. Practitioners quite justly resent any official action which seems to question their bona fides, and we receive letters objecting to the activities of approved society officials and of the staff of the Ministry of Health. And yet it is the plain duty of the Ministry to see that Act and regulations are properly administered; and in face of the Government Actuary's report and the results of recent investigations by the department, it is not to be wondered at that all means available should be used to ensure control. The big rise in sickness claims is seriously jeopardising the growth of additional benefits and stifling the development of the insurance scheme. That the position was and is still serious is shown by the introduction last week of a Government Bill to amend the rates of sickness and disablement benefit. One proposal is to reduce the sickness benefit of married women from 12*s.* to 10*s.* a week, and the disablement benefit from 7*s.* 6*d.* to 5*s.* The Government Actuary's report on the Bill states that even the reduced benefit rates for women will require an increase in contributions from 8½*d.* to 9*d.* to support them, if claims conform to the average of 1928–30. If the claims can be reduced by 10 per cent. the present contributions will be sufficient. In such circumstances it is essential that the state of mind of the insurance doctor should be the right one if he is to do his duty and further the interests of all his insured patients. Many recent attempts have been made to establish a better understanding between doctors and approved societies, and conferences for this purpose are being held up and down the country. A leading article in the *National Insurance Gazette* for April 30th remarks:—

> "The natural attitude of a doctor to his patient must be one founded on sympathy. We cannot possibly ask or expect the doctor to adopt the attitude of a suspicious detective. . . . But the root question, to us, is this: Do the doctors as a whole yet appreciate, as fully as is desirable, that they are being deceived by a number of their patients? Do they fully understand the proved facts and the unchallengeable statistics? The trade dispute claims, the holiday claims, the married women claims are plain enough. Insured persons are getting certificates of incapacity when they are not incapable of work. . . . We want the doctors, as a body, to be convinced that the proved facts call for their coöperation."

That is the considered view of approved society officials. "Very rarely indeed" the *Gazette* concedes, "is dishonesty the difficulty; the trouble is mistakes, in facts and points of view." This seems reasonable enough. If the insurance scheme is not to suffer lamentably at the hands of some certifiers some change in the point of view may be needed.

Drugs and Their Cost.

Under Article 6 of the consolidated regulations the Minister of Health determines the tariff of drugs supplied by chemists as part of medical benefit under the National Health Insurance scheme. The issue of a new tariff for the period April to September, 1932, gives occasion for comment on some features which may escape attention from their very familiarity.

Part I. deals with the calculation of charges for drugs, preparations, and appliances supplied to insured persons. The main principle of this method is that ingredients are charged at cost price and a dispensary fee is added for each prescription. Practitioners might do well to consider this more carefully than they have done in the past. For example, to order boric lint, oiled cambric, absorbent wool and bandage to a septic focus means a dispensing fee for each article supplied, whilst if the complete dressing is ordered under the title Standard Dressing No. 2 the same materials are supplied with only a single dispensing fee.

Part II. sets out details of dispensing fees, this year subject to a 10 per cent. deduction. It is cheaper when ordering capsules, lozenges, pastilles, tablets, or pills, if two dozen are required to order them at once rather than one dozen to be repeated in say a week's time. Provision is made that, in addition to the fee specified in the scale, actual out-of-pocket expenses are payable in respect of insulin, serums, vaccines, proprietary preparations, and appliances not included in the tariff which need to be obtained specially by the chemist.

Part III. gives the prices of drugs and preparations. Drugs, like other commodities, vary in price. Bismuth, for example, has been lately very expensive, but recently has dropped a little in price. The same applies to the iodides. Many of the chemicals used in dispensing come from abroad and will be subject to the 10 per cent. duty. This may have a substantial effect on the cost of prescriptions generally. It should be noted, however, that last year there was money over, after all the chemists' accounts had been settled, to pay a bonus of just over 15 per cent.

Part IV. contains the official list of appliances. Eye droppers are allowed, but not ear droppers. Eyeshades are not allowed. Hypodermic syringes for diabetic cases, not for asthma. There is doubt as to whether ribbon gauze is allowed. Adrenalin gauze is not in the list, although adrenalin and gauze may be ordered separately. The standard dressings have recently been made up in a more convenient size. No. 1 contains 36 × 12 in. of double cyanide gauze, grs. 180 of absorbent wool, and 1 in. × 3 yds. open wool bandage. No. 2 contains, 1 sq. ft. of boric lint, grs. 240 of cotton-wool, 6 × 6 in. of oiled cambric, and 2 in. × 4 yds. bandage.

Part V. notes the deposits to be made for containers supplied to insured persons, to be paid back when the container is returned in a clean condition. For ordinary medicine bottles over 4 oz. and under 10 oz. the deposit is 2*d.* Some time ago it was proposed that insured persons should be required to bring containers that are graduated, in order to avoid the waste of medicine if (say) 8 oz. of a mixture is placed by the chemist in a beer bottle brought by the insured person; but no regulation has yet been made on the subject.

The drug figures presented to the London Insurance Committees in March were as follows:

	1931.		*1930.*
Total prescriptions for the last quarter	2,145,578	..	2,144,008
Cost of ingredients	£29,539 0*s.* 11*d.*	..	£29,507 17*s.* 7*d.*
Cost of dispensing fees	£39,161 9*s.* 10*d.*	..	£38,984 15*s.* 0*d.*
Total cost of prescriptions ..	£68,700 10*s.* 9*d.*	..	£68,492 12*s.* 7*d.*
Average cost of ingredients ..	3·30*d.*	..	3·31*d.*
Average dispensing fee.. ..	4·38*d.*	..	4·36*d.*
Average total cost of prescriptions	7·68*d.*	..	7·67*d.*
Mean number of persons on lists	1,908,102	..	1,891,058
Average prescriptions per person	1·12	..	1·13
Average total cost per person ..	8·64*d.*	..	8·69*d.*

While the gross figures may appear large the unit figures are small. During the year 1931 chemists on the list dispensed 20,821 prescriptions for insulin at a total cost of £6756 4*s.* 11*d.*

recent study he has found the death-rate for the period 1920–29 to be 143 for the three recovered Departments as compared with 173 for the whole of France. As the latter figure includes the three Departments, the difference between the two must be even greater than the above figures would suggest. In both statistics the Department of the Upper Rhine leads, and the Department of the Lower Rhine comes last, while the Moselle occupies an intermediate position. A comparison of the infant mortality in the recovered Departments with that of the whole of France tells the same tale; in the four-year period 1923–26 the former (Upper Rhine only) was 720 per 10,000 live births, while the latter was 919. In the same period and areas, the death-rates for persons over the age of 1 year were 125 and 157 respectively. Dr. Mosser examines the various factors such as climate, rural and industrial distribution of the population, &c., in the two areas which might possibly explain this consistent and striking difference in the death-rates, and he comes to the conclusion that it is to be found in the benefits of sickness insurance which provides the worker with all the best therapeutic devices of modern medical science and the service of specialists. He calculates that if France, as a whole, could reduce her death-rate to that of the Upper Rhine, there would be a saving of 130,000 lives a year. With the health conscience France is so vigorously cultivating at the present time, there is every prospect of her shortly attaining the goal to which Dr. Mosser points.

MEDICINE AND THE LAW.

Damages for Injured Doctor.

It is the special function of a jury to assess the amount of damages in a common-law action. A new trial will be ordered on the ground of excessive damages only when the amount is greater than any jury would reasonably give—i.e., where the court can find no reasonable proportion between the amount awarded and the loss or injury sustained. In actions for personal injuries due to the defendant's negligence the jury, said Brett, J., in 1873, must not attempt to give damages to the full amount of a perfect compensation for the pecuniary injury, but must take a reasonable view of the case and give what they consider in all the circumstances of the case a fair compensation.

Early this month in Mr. Justice Swift's court a common jury awarded £5243 to Dr. Francis Joyce, of Camberwell-road, S.E., who had been knocked off his bicycle by the defendant's negligence. He received a lacerated wound from elbow to wrist; the ulnar nerve was torn, and the use of his hand in performing surgical operations would be affected. On the day after the trial the defendant's counsel applied for a stay of execution, pending appeal, on the ground that the damages were grossly excessive. Mr. Justice Swift said he did not think the amount was at all excessive in the case of a professional man whose practice depended entirely on his skill with his hands and the appearance which he presented with his hands. The judge refused to stay execution except upon terms that Dr. Joyce should be paid £2500 at once, not to be recoverable in any event, that the balance of £2743 should be paid into court to abide the decision of the Court of Appeal, and that notice of appeal be given and appeal entered within seven days. These terms were, however, varied last Tuesday by order of the Court of Appeal; the sum to be paid forthwith to Dr. Joyce was reduced to £500, the balance to be paid into court within 14 days and costs to be taxed and paid to him on the undertaking to return them if an appeal succeeds. If anybody thinks £5000 a little too much, many may think £500 much too little; it will be interesting to see what principle the appellate tribunal establishes in the event of appeal.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Rear-Admiral W. W. Keir has been appointed to the charge of the R.N. Hospital, Haslar, vice Surg. Rear-Admiral H. C. Whiteside.

The following appts. are notified: Surg. Lt.-Comdr. (D) O. J. Barrable to *Victory*, for R.N. Barracks. Surg. Lts. (D) R. W. Stevens to *Resource*, and J. C. Benson to *Ganges*.

ROYAL ARMY MEDICAL CORPS.

Maj. J. H. Baird retires on retd. pay.

MILITIA.

Maj. J. B. Williamson retires on attaining the age limit and retains the rank of Maj.

TERRITORIAL ARMY.

Maj. G. A. Bridge, R.A.M.C., to be Divl. Adjt., 42nd (E. Lan.) Div. & Sch. of Instn., vice Capt. F. C. Hilton-Serjeant, R.A.M.C., vacated.

I. Mackintosh (late Lt. Malay States Vol. Corps) to be Lt.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers for three years on the active list: O. S. M. Williams, T. A. Hunt, and H. J. Melville.

Flying Officer V. H. Tompkins ceases to be seconded to the General Infirmary, Leeds.

Squadron Leader R. E. Bell is placed on the retired list at his own request.

Dental Branch.—J. E. Willoughby is granted a non-permanent commission as a Flying Officer.

DEATHS IN THE SERVICES.

Major-General Bruce Morland Skinner, C.B., C.M.G., M.V.O., an old St. George's man who qualified in 1879, died at Colchester, aged 74. He entered the Army Medical Service in 1882, and subsequently served on the North-West Frontier of India (medal with clasp). In the South African war of 1899–1901 he was present at the relief of Kimberley, and at the battles of Paardeberg, Poplar Grove, and Driefontein (despatches, Queen's medal with five clasps). He was made M.V.O. in 1906, and in 1910 was appointed honorary surgeon to the Viceroy of India. For a time he acted as secretary of the Advisory and Nursing Boards at the War Office, and was afterwards Commandant and Director of Studies at the Royal Army Medical College. During the European war (mentioned in despatches five times, C.M.G. and C.B.) he was director, after Deputy Inspector, of Medical Services. He retired in 1917, and in the following year received the honorary rank of major-general.

The name of Maj. H. C. Godding, R.A.M.C., has been brought to notice by His Excellency, General Sir Philip Chetwode, Commander-in-Chief in India, for distinguished services rendered in connexion with military operations on the North-West Frontier of India, during the period October, 1930, to March, 1931.

Donations and Bequests.—Among other bequests the late Mrs. Florence A. Oldham, of Birchington, left by will on the death of her husband £1000 each to the Cancer Hospital, Brompton, and the Royal Hospital for Incurables; and £500 each to St. Thomas's Hospital and Tottenham Cottage Hospital.—The late Mr. Thomas H. Lowthian, of Buxton, left £1000 each to the Devonshire Hospital, Buxton, the Manchester Royal Infirmary, and the Lancashire, Cheshire, and North Wales Council of the British Empire Cancer Campaign; and £500 to the Buxton Cottage Hospital.—By the will of the late Miss Agnes Jane Templeton, of Holme Hill, Dunblane, Perthshire, the following bequests have been made among others: £500 each to the Glasgow Royal Infirmary, Western Infirmary, Glasgow, Victoria Infirmary, Glasgow, and Glasgow Royal Cancer Hospital; £300 to Glasgow Medical Missionary Society.—The late Mr. Godfrey George Halsted, of Poling, in addition to other bequests, left £4000 to Chichester Infirmary.

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London, May 5th, 1932.

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Concerning the blood picture, cases of Addisonian pernicious anæmia in children have indeed been described, but, so far as we are aware, no associated dwarfism has been recorded though a somewhat similar blood picture may occur with idiopathic steatorrhœa and dwarfism.

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SIR,—In your leading article (April 30th, p. 941) on the economic aspect of the rheumatic diseases no specific mention was made of deep X rays. This treatment, it is true, has little value in the polyarticular variety of rheumatism, in the ulnar defection of the fingers and constitutional disturbance, generally known in this country as rheumatoid arthritis, but in the case of osteo-arthritis of hyperthymic type which occurs in middle-aged people who otherwise appear to be in good health, the effect of properly applied X ray treatment is often remarkable. Function as well as pain is beneficially affected, and the economic aspect therefore becomes of importance. Moreover, the treatment of osteo-arthritis by X rays can be carried out very largely by making use of existing hospital facilities. I have had personal experience of this work for three years, both in hospital and private practice, but most of my cases have so far been of the hospital type, and, unfortunately, all suffering from an advanced form of the disease with osteophytes and destruction of the intra-articular cartilages.

What can be done for these cases? In ascending order: (1) By the relief of pain the patients become less troublesome in their homes, and their relatives have more time and freer minds to deal with their own work. (2) Function may improve sufficiently for an almost helpless patient to get about the house and attend to himself. (3) A patient who has been able to walk a few hundred yards only may be enabled to return to light employment. (4) In a

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CORRESPONDENCE

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SIR,—Mr. Victor Bonney's admirable address on Sterility presents the local aspects of the subject which he considers in a very lucid manner. As he says, the more general, namely, the effects of the internal secretions—and, he might have added, of the vitamins, particularly vitamins D and E—are more difficult to assess, but are undoubtedly of great importance. There are, however, one or two points in connexion with the remarks of Mr. Bonney which I should like to supplement.

Mr. Bonney refers to the beneficent effect that has been observed after dilatation of the cervices of relatively sterile nulliparæ, and says that as the cervical canal can never of itself be an obstruction to the ascent of spermatazoa "it is difficult to see how it [dilatation] acts." I think the explanation is this. Such cervices are unlacerated and embrace the dilators tightly; consequently a non-perforated dilator acts as a piston and forces air through the Fallopian tubes. Personally, I have used canalised dilators in order that fragments of endometrium or neoplasms may not be driven through the tubes and become implanted on the peritoneum. This view is supported by the fact that simple transcervical insufflation of the tubes as now practised is not infrequently—more commonly, I think, than Mr. Bonney implies—followed by pregnancy. I entirely agree with what Mr. Bonney says about curettage. For sterility alone it is a vicious practice. Many men seem to have a "D. and C." complex; they cannot dilate the cervix without curetting also. I have seen several cases in which this operation has been followed by infection with blockage of the tubes.

The rest of my observations concern points of technique in regard to remedial measures. First, may I say how pleased I am to find Mr. Bonney a supporter of conservative methods in regard to the Fallopian tubes; and once more I may be allowed to remark that successful conservative surgery is largely dependent on operative skill, and opinions as to its merits are liable to be based on the technical competence of the surgeon concerned. As I was the first to advocate, describe, and illustrate insufflation of the Fallopian tubes from above (Article Disorders of Function in Eden and Lockyer's "System of Gynæcology," 1917) some years before Rubin introduced transcervical insufflation, I may claim to have had a very large experience of it and of reparative tubal operations. I do not believe the type of syringe used matters much, but I do think enough consideration has not been given to the type of point employed. This should be set at an angle to the body of the syringe, for one cannot always in a fat woman "deliver" the tube. The point itself should not be too long; it should be smooth, blunt, and tapering, as is one of those supplied with Gray's syringe for local anæsthesia. An olive-like swelling not far from the point may be an advantage by making for ease in compressing the tubal wall round the point with the thumb and first finger.

I fail entirely to see the advantage of using the sphygmomanometer attached to a metal tube passed through the cervix with the related clamping of the other tube, as advised by Mr. Bonney. As he mentions, it is practically always possible on insufflation to observe the site of obstruction, if any, by the dilatation of the tube behind the point of blockage. When the air passes readily into the uterus it can be heard—even by spectators present—roaring through the cervix; and, as I have often demonstrated, in the absence of any noise, air that has passed into the uterus can be felt gurgling in this organ when it is nipped between the finger and thumb, and expelled.

With regard to salpingostomy, I believe in imitating Nature so far as is possible, and therefore I do not perform a "cuff operation," but slit the tube for half an inch along the antimesenteric border, overturn the edges and bring the mucosal point down to the ovary in order that there may be a gutter-like entrance to the tube in imitation of the ovarian fimbria which I believe to be of importance, although it represents all that is "left" of the so-called hydrocele-envelope enclosing the orifice of the tube and the ovary in the hedgehog and in certain rodents.

Lastly, I do not like Mr. Bonney's method of tubal implantation. Has he found the tubes patent on subsequent transcervical injection with lipiodol? Implantation of the Fallopian tubes is admittedly a very delicate and difficult operation. I think it is absolutely essential that the tube be split at the uterine end, as in the case of the ureter to be implanted in the bladder, and that one flap be fixed to the anterior surface of the endometrium and the other to the posterior surface. Prior to the fixation a Cleveland ligature-forceps should be gently passed through the separated, but already dilated tube and a couple of strands of thin silkworm gut drawn through and allowed to project to the extent of about an inch beyond the abdominal ostium. The other ends should be coiled up and left in the uterine cavity to be withdrawn, with the patient under gas, a week or ten days later. This is easily accomplished if the cervix be slightly dilated and an angled pair of compression forceps be used to seize the threads. Again, it is necessary to ensure by incisions in the uterine wall that the tubes be not compressed as they pass through the uterus.

In spite of these suggestions I do not for one moment wish to imply that finality of technique in these intricate conservative operations has been reached. For this reason I have not written much about details, holding that, provided surgeons recognise the essential principles, the development of the best methods to secure the end desired is not long delayed.

I am, Sir, yours faithfully,

W. BLAIR BELL.

Liverpool, May 8th, 1932.

SYNERGIC ACTION OF ŒSTRIN.

To the Editor of THE LANCET.

SIR,—In THE LANCET in 1928 (ii., 1020) we published a short paper showing that a preparation containing œstrin, when added to a bath containing an isolated uterus taken from a guinea-pig, had the effect of causing the muscle to contract more vigorously when pituitary (posterior lobe) extract was added to the bath; we observed that the preparation of œstrin used did not similarly affect the contractile response to histamine. We stated our opinion that the augmentation of the response to pituitary extract must be due to the œstrin itself, because a non-specific factor, such as protein, would have augmented the response to histamine as well. It has since been stated by Heller and Holtz,[1] and also by Jeffcoate,[2] that solutions of crystalline œstrin exert no synergic effect of the kind described. We have also examined the effect of crystalline œstrin (which was not available in 1928), and we wish to state that we confirm Heller and Holtz, and Jeffcoate.

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SIR,—Mr. Victor Bonney's admirable address on Sterility presents the local aspects of the subject which he considers in a very lucid manner. As he says, the more general, namely, the effects of the internal secretions—and, he might have added, of the vitamins, particularly vitamins D and E—are more difficult to assess, but are undoubtedly of great importance. There are, however, one or two points in connexion with the remarks of Mr. Bonney which I should like to supplement.

Mr. Bonney refers to the beneficent effect that has been observed after dilatation of the cervices of relatively sterile nulliparæ, and says that as the cervical canal can never of itself be an obstruction to the ascent of spermatazoa "it is difficult to see how it [dilatation] acts." I think the explanation is this. Such cervices are unlacerated and embrace the dilators tightly; consequently a non-perforated dilator acts as a piston and forces air through the Fallopian tubes. Personally, I have used canalised dilators in order that fragments of endometrium or neoplasms may not be driven through the tubes and become implanted on the peritoneum. This view is supported by the fact that simple transcervical insufflation of the tubes as now practised is not infrequently—more commonly, I think, than Mr. Bonney implies—followed by pregnancy. I entirely agree with what Mr. Bonney says about curettage. For sterility alone it is a vicious practice. Many men seem to have a "D. and C." complex; they cannot dilate the cervix without curetting also. I have seen several cases in which this operation has been followed by infection with blockage of the tubes.

The rest of my observations concern points of technique in regard to remedial measures. First, may I say how pleased I am to find Mr. Bonney a supporter of conservative methods in regard to the Fallopian tubes; and once more I may be allowed to remark that successful conservative surgery is largely dependent on operative skill, and opinions as to its merits are liable to be based on the technical competence of the surgeon concerned. As I was the first to advocate, describe, and illustrate insufflation of the Fallopian tubes from above (Article Disorders of Function in Eden and Lockyer's "System of Gynæcology," 1917) some years before Rubin introduced transcervical insufflation, I may claim to have had a very large experience of it and of reparative tubal operations. I do not believe the type of syringe used matters much, but I do think enough consideration has not been given to the type of point employed. This should be set at an angle to the body of the syringe, for one cannot always in a fat woman "deliver" the tube. The point itself should not be too long; it should be smooth, blunt, and tapering, as is one of those supplied with Gray's syringe for local anæsthesia. An olive-like swelling not far from the point may be an advantage by making for ease in compressing the tubal wall round the point with the thumb and first finger.

I fail entirely to see the advantage of using the sphygmomanometer attached to a metal tube passed through the cervix with the related clamping of the other tube, as advised by Mr. Bonney. As he mentions, it is practically always possible on insufflation to observe the site of obstruction, if any, by the dilatation of the tube behind the point of blockage. When the air passes readily into the uterus it can be heard—even by spectators present—roaring through the cervix; and, as I have often demonstrated, in the absence of any noise, air that has passed into the uterus can be felt gurgling in this organ when it is nipped between the finger and thumb, and expelled.

With regard to salpingostomy, I believe in imitating Nature so far as is possible, and therefore I do not perform a "cuff operation," but slit the tube for half an inch along the antimesenteric border, overturn the edges and bring the mucosal point down to the ovary in order that there may be a gutter-like entrance to the tube in imitation of the ovarian fimbria which I believe to be of importance, although it represents all that is "left" of the so-called hydrocele-envelope enclosing the orifice of the tube and the ovary in the hedgehog and in certain rodents.

Lastly, I do not like Mr. Bonney's method of tubal implantation. Has he found the tubes patent on subsequent transcervical injection with lipiodol? Implantation of the Fallopian tubes is admittedly a very delicate and difficult operation. I think it is absolutely essential that the tube be split at the uterine end, as in the case of the ureter to be implanted in the bladder, and that one flap be fixed to the anterior surface of the endometrium and the other to the posterior surface. Prior to the fixation a Cleveland ligature-forceps should be gently passed through the separated, but already dilated tube and a couple of strands of thin silkworm gut drawn through and allowed to project to the extent of about an inch beyond the abdominal ostium. The other ends should be coiled up and left in the uterine cavity to be withdrawn, with the patient under gas, a week or ten days later. This is easily accomplished if the cervix be slightly dilated and an angled pair of compression forceps be used to seize the threads. Again, it is necessary to ensure by incisions in the uterine wall that the tubes be not compressed as they pass through the uterus.

In spite of these suggestions I do not for one moment wish to imply that finality of technique in these intricate conservative operations has been reached. For this reason I have not written much about details, holding that, provided surgeons recognise the essential principles, the development of the best methods to secure the end desired is not long delayed.

I am, Sir, yours faithfully,

Liverpool, May 8th, 1932. W. BLAIR BELL.

SYNERGIC ACTION OF ŒSTRIN.

To the Editor of THE LANCET.

SIR,—In THE LANCET in 1928 (ii., 1020) we published a short paper showing that a preparation containing œstrin, when added to a bath containing an isolated uterus taken from a guinea-pig, had the effect of causing the muscle to contract more vigorously when pituitary (posterior lobe) extract was added to the bath; we observed that the preparation of œstrin used did not similarly affect the contractile response to histamine. We stated our opinion that the augmentation of the response to pituitary extract must be due to the œstrin itself, because a non-specific factor, such as protein, would have augmented the response to histamine as well. It

OBITUARY

SIR THOMAS MORISON LEGGE, C.B.E., M.D. Oxf., D.P.H.,

LATE SENIOR MEDICAL INSPECTOR OF FACTORIES.

WE regret to announce the death of Sir Thomas Legge, which occurred on Saturday, May 7th, at Wintergreen, Warlingham, in the 70th year of his age.

Thomas Morison Legge was born at Hong-Kong in 1863, the younger son of Prof. James Legge, the well-known Chinese scholar. He was educated first at Dollar Academy, of which he always preserved happy memories; but when his father was appointed Professor of Chinese at Oxford he was entered at Magdalen College School. He proceeded to Trinity College, Oxford, and completed his medical education at St. Bartholomew's Hospital. He graduated as M.B., B.Ch. Oxf. in 1890, and obtained the doctorate in 1894. He was brought up in an academic atmosphere which affected his whole life. He read physiology under Burdon Sanderson and Gotch at a time when J. S. Haldane and Leonard Hill were working in the laboratories, and obtained honours in the natural science school. Interested from the first in problems of public health he was fortunate in being able to make a long stay on the Continent investigating them. He paid a series of visits to Paris, Berlin, Brussels, Copenhagen, Stockholm, and Christiania (now Oslo), and in 1896 wrote a useful book, entitled "Public Health in European Capitals," describing the municipal sanitary administration in those cities. As a result mainly of the discriminating qualities of this work, he was appointed secretary of the Royal Commission on Tuberculosis which sat during 1896–98, and his familiarity with the foreign centres was most valuable to the Commissioners on their personal tours of inspection. On the conclusion of the labours associated with the Commission he worked for a short time under Sir Arthur Newsholme, then M.O.H. for Brighton, and was soon appointed the first Medical Inspector of Factories and Workshops, a post which he held for nearly 30 years. He was associated from the beginning with Sir Arthur Whitelegge, who had recently been brought from Yorkshire to be Chief Inspector of Factories, the appointment not being associated with his medical qualification. Legge threw himself with zest into the work. A description of that work was given modestly in the Shaw Lectures which he delivered before the Society of Arts in 1929, when he set out 30 years' experience of industrial maladies. In one of these lectures he described as the most exciting day of his life that on which he was able to connect posterior cortical cataract with the exposure to glare in a glass-blowing factory, confirming the observations of a half-blind trade-union official. An investigation into the existence of cataract among the members of certain large trade-union societies followed and confirmed Legge's findings. In the same Lectures he resumed his share in clearing up the causation of nystagmus and described inquiries into trinitrotoluene poisoning, grindstone silicosis, and many conditions, such as "beat-hand," "beat-elbow," and "beat-knee," which bulk largely in questions of compensation. The main message of these addresses was that the public were not cognizant of the conditions that existed, and in his Chadwick Lecture, delivered before the Institute of Hygiene, he developed the theme by insisting that his own profession, speaking generally, was little better informed. For he urged the necessity of teaching industrial hygiene to the medical student, regarding such subjects as vital statistics, factory hygiene, and industrial poisoning as barely dealt with in the medical curriculum, so that the duties of the practitioner in respect of preventive medicine and the sanitary administration of the country were left for the young doctor to find out for himself. He held that the medical student should receive a picture of the causes underlying industrial unrest, pointing out that the psychology of the worker and of the employer formed matters of first importance to the country. The theme was always a favourite one with him.

SIR THOMAS LEGGE.

Legge was recognised as one of the first authorities on anthrax in the country, and on this subject he delivered the Milroy Lectures before the Royal College of Physicians of London. Here he detailed the whole story of anthrax in relation to hides, skin, and horsehair, going elaborately into the arguments for and against certain lines of treatment of the human subject. The lectures were published in THE LANCET and the second of them contains a striking analysis of a series of cases of external anthrax treated by Sclavo's serum, when Legge came to the conclusion that with the use of the serum some sufferers were saved, and that internally it was the only treatment holding any hope of benefit. The subject of lead poisoning was also one which Legge made his own in respect of public health aspects. He instituted through his department wide and close inquiries into the amount of injury caused to the workers, and it became common knowledge to the public that for some years there had been a serious annual death-rate from plumbism. The Lead Paint (Protection Against Poisoning) Act followed, and in 1921, under the auspices of the International Labour Office of the League of Nations, with whose activities Legge was always in close relation, a draft Convention was agreed to by the representatives of 30 countries, including Great Britain, having for its object international measures against the disease. Under this Convention the use of lead paint for work was to be made prohibitive, but in 1927 in this country the restriction was not made absolute, only a regulation for the employment of the paint being required. Legge, who was a delegate of the British Government when the Convention had been agreed upon, resigned his position under the Home Office in protest; his convictions enjoined the course upon him, but fortunately his term of office had nearly expired.

In 1918 Legge had received the C.B.E. and in 1925 he was knighted. In addition to his valuable public deliveries, and his book already mentioned, Legge small but by no means negligible proportion of cases the patient's earning capacity may be fully restored.

Why should we allow patients to reach a state of crippledom? Early diagnosis, followed by radiotherapy and other suitable measures, would surely for the most part arrest organic change and prevent loss of function.

I am, Sir, yours faithfully,
F. HERNAMAN-JOHNSON.
Brook-street, W., May 9th, 1932.

THE EXPERT WITNESS.

To the Editor of THE LANCET.

SIR,—Facetious observations dovetailed into a serious discussion are proverbially dangerous. My remark concerning what expert witnesses think of each other, is a case in point (see THE LANCET of last week, p. 990). As the cold print of your excellent report may lead the reader to think I was serious, I venture to claim your hospitality to explain that the remark was intended to be jocular. Luckily the audience, which comprised several distinguished experts, understood—perhaps because I added the well-worn story about the Judges' address to Queen Victoria ("Conscious as we are of our imperfections, &c."). It is common knowledge that, however much experts may disagree in the witness-box, they usually have a generous appreciation of each other's qualities.

I am, Sir, yours faithfully,
20, Queen Anne's-gate, S.W., May 9th, 1932. RIDDELL.

R.C.S. COUNCIL ELECTION.

To the Editor of THE LANCET.

SIR,—Fellows of the Royal College of Surgeons have recently received two documents concerning the impending election to Membership of the Council.

The first of these documents was an appeal signed by members of the Court of Examiners and printed on paper bearing the address of the Examination Hall. It requested Fellows of the College to record their votes in favour of a Member of the Court. This document conveyed to many Fellows the impression of being of an official character, authorised or allowed by the ruling body of the College. It betrayed junior Fellows of the College, who had little experience of exercising their vote, into acting as the document requested. But the second missive showed how mistaken was the view that the first was official. For this document conveyed the terms of a resolution passed by the Council reproving the Court for its improper action which was strongly deprecated.

The difficulty which now confronts many of us in reference to what we regarded as an official request (now known to be a most reprehensible action) is that we have recorded our votes in a manner which, but for the pseudo-official action, we should never have contemplated. The counting of the vote may therefore record a result which we do not desire.

In view of this difficult position may I, on behalf of many friends as well as myself respectfully suggest to the Council that this election be regarded as invalid: or, if that is not possible, that the candidate concerned should consider his action? He would probably not desire to be elected by votes he has not himself earned; by votes, that is, mistakenly given in the belief that we were supporting the desires of a President and Council whom all of us regard with utmost respect, and whose wishes we should desire to observe.

I am, Sir, yours faithfully,
F.R.C.S.
May 6th, 1932.

TRAINING IN TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In your issue of April 30th (p. 954) Dr. Maurice Davidson makes the statement that there are "only four centres—viz., Manchester, Sheffield, Edinburgh, and Glasgow—at which the existing course of teaching in this subject forms a compulsory part of the curriculum for undergraduates. Instruction in other schools may be admirable, but attendance on the courses is voluntary." He adds: "In centres where no such facilities are offered in the teaching hospital itself, but where ample clinical material and organisation exists in the municipality, there is a lack of adequate coöperation between the medical school and the municipal authorities." So far as the University of Aberdeen is concerned these statements are contrary to the facts. Training in tuberculosis is a compulsory part of the curriculum of candidates for the degress of M.B., Ch.B. of Aberdeen, and has been so for a number of years. In Aberdeen, the university, the voluntary hospitals, and the town council coöperate in the closest and most friendly manner. The lecturer in tuberculosis in the university is also tuberculosis officer for the town council. The head of the public health department in the university is medical officer of the town council as were his two predecessors.

I am, Sir, yours faithfully,
H. J. BUTCHART,
May 6th, 1932. Secretary, Marischal College, Aberdeen.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 30TH, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 62 (last week 96); scarlet fever, 1669; diphtheria, 813; enteric fever, 22; acute pneumonia (primary or influenzal), 947; puerperal fever, 38; puerperal pyrexia, 106; cerebro-spinal fever, 56; acute poliomyelitis, 3; acute pôlio-encephalitis, 4; encephalitis lethargica, 12; dysentery, 15; ophthalmia neonatorum, 115. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 3rd–4th was as follows: Small-pox, 106 under treatment, 2 under observation (last week 128 and 3 respectively); scarlet fever, 1479; diphtheria, 1308; enteric fever, 8; measles, 2632; whooping-cough, 423; puerperal fever, 14 (plus 6 babies); encephalitis lethargica, 224; poliomyelitis, 4; "other diseases," 99. At St. Margaret's Hospital there were 17 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 94 (46) from measles, 4 (1) from scarlet fever, 54 (12) from whooping-cough, 25 (2) from diphtheria, 47 (12) from diarrhœa and enteritis under two years, and 72 (4) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 19 deaths from measles, Manchester 3, Bradford and Leeds each 2. Liverpool also reported 6 deaths from whooping-cough, Bristol and Walsall each 3. Diphtheria was credited with 4 deaths at Manchester, 3 at Hull, 2 at Leeds.

The number of stillbirths notified during the week was 300 (corresponding to a rate of 42 per 1000 births), including 49 in London.

MANCHESTER STUDENTS' COLLECTION.—The amount collected by students of the University of Manchester at their Shrovetide rag this year was £4250, or over £1750 less than last year. The sum of £1000 has been allocated to the Royal Infirmary, and the remainder to other medical charities in Manchester and Salford.

JOHN ABERNETHY WILLETT, M.D. Oxf., M.R.C.P. Lond.

We regret to announce the death of Dr. J. A. Willett, which occurred on Thursday, May 5th, in a nursing home in London, in his sixtieth year.

John Abernethy Willett was the second of the five sons of Mr. Alfred Willett, the distinguished surgeon of St. Bartholomew's Hospital, his mother being the only daughter of Sir George Burrows, President of the Royal College of Physicians of London 1871/75. John Willett was educated at Westminster and at Oxford, and proceeded for his medical education to St. Bartholomew's Hospital. He obtained the double English qualifications in 1899, and in the next year graduated in medicine at Oxford, taking the M.R.C.P. Lond. three years later, and in 1906 passing to the M.D. degree. He held the usual resident appointments at St. Bartholomew's Hospital where, afterwards, he was chief assistant in the gynæcological and obstetrical department, and demonstrator of practical obstetrics in the school. Though failing to secure a place on the staff of his hospital he made a fine impression on his colleagues by the character of his work and the standard of his teaching. He was for a period resident medical officer at Queen Charlotte's Lying-in Hospital, and was shortly afterwards elected assistant physician to the City of London Lying-in Hospital and surgeon to the Samaritan Free Hospital. These latter appointments he was holding when he died, although he had just sent in his resignation to both of them, being in each case senior member of the staff. He was also gynæcologist to St. Andrew's Hospital, Dollis Hill.

The contribution to obstetrics by which Willett will best be known is his paper published in 1925 on the treatment of placenta prævia by continuous weight traction. This method was based on a very simple conception and, used in suitable cases, its great simplicity and ease of performance have real advantage over more complicated measures. The results of the use of Willett's forceps in this serious obstetrical condition have been good and have led to an increasing resort to this method of treatment. Both on the staff of the Samaritan Hospital and at the London Maternity Hospital he earned the particular gratitude of the nursing staffs for he was deeply interested in their share of the work and spared no trouble in making both the scientific and practical sides of nursing accessible to them.

Joe Willett, as he was generally known in his own small and intimate circle, was a very simple man, both in his professional and his ordinary life. He was not ambitious in the usual sense of the word and did not strive for public fame or consciously seek the approbation of his fellows. So simple was his life-plan that it seemed as if, early in his career, he had recognised his scope and had made up his mind not to go outside it. Within this scope, he was admirable in all he did and said, and was recognised as an absolutely trustworthy man whose views were sound. The possession of a private income sufficient for his needs enabled him to lead a quiet life (he even kept his name out of the Telephone Directory) and to avoid the fever and the fret of private practice. His pleasures and pursuits were just what would be expected: fishing, good music, and golf—but all enjoyed in a moderate and simple manner. Willett was a sound clinician and a born teacher, and these were the parts of his work which especially appealed to him. He gave of his best to the hospitals he served and the pupils he taught; medical students and post-graduates, midwives and nurses. There was nothing he enjoyed more than giving bedside instruction in the hospital or at the antenatal clinic. Though the reasons could be easily understood, it was a constant source of wonder and regret that with his instinct for clinical teaching he had never attained a position on the staff of a teaching hospital. In place of it, he threw himself wholeheartedly into the teaching of midwives and helped the Midwives Institute as a lecturer, on its advisory committee, and in organising courses of training and examination for the Midwife-Teachers' Certificate. When the Central Midwives Board took over this examination last year, his advice and his experience as an examiner were invoked by the board.

It may be asked whether one who wrote so little and spoke so seldom at medical societies exerted any influence on current obstetric thought? He did, in a quiet way, and almost entirely by personal contact with his colleagues and pupils. His outlook was not so much conservative as limited; and the limitation of his activities was imposed by a natural diffidence and an inborn dislike of competition with other men and other opinions. Willett will be missed by many friends who loved him for his simple character and his loyalty to high ideals of conduct.

ROYAL MEDICAL BENEVOLENT FUND.

AT a recent meeting the committee voted 55 grants, amounting to £997. The following are particulars of a few cases helped:—

Daughter, aged 85, of M.D. Father died in 1869 at the age of 79. The applicant, even at the age of 85, is still trying to maintain herself by her own efforts. She is assistant organist at the parish church, and also teaches music to children, and by these means earns £22 10*s.* She lives in her own small house; she takes in one lodger, who pays £27 a year. Up till recently she let three rooms in her house, but the tenant died last year, and the applicant has been unable to re-let. It was discovered that this old lady's total income was £76 16*s.*, out of which she had to pay rates of £12 13*s.* Fund voted £26 in four instalments for a period of one year, to be renewed annually if circumstances remain the same.

M.R.C.S., aged 56. Had a stroke in the autumn of 1931, and is incapacitated for professional duties. His practice was small, and very little is expected from it. Private income of applicant and his wife, aged 59, does not exceed £50 a year. Fund voted £10, payable in four instalments over a period of one year.

Widow, aged 59, of M.R.C.S., was left penniless by the death of her husband in 1925. At first the applicant took a house and maintained herself by taking paying guests. Afterwards she took a post as housekeeper, which she retained for some years until her health broke down. She has now had to undergo a severe abdominal operation, and a medical report states that she will not be fit for remunerative work in the future.

The applicant therefore becomes entirely dependent on her two daughters, ages 30 and 22, each of whom has employment, but with small salaries. Fund voted £26, payable in four instalments over a period of one year.

Cheques should be made payable to the hon. treasurer of the Fund, 11, Chandos-street, Cavendish-square, London, W.1.

West End Hospital for Nervous Diseases.—Last year there were 522 new in-patients, a small reduction; there was also a fall in the number of out-patients, whose 41,256 attendances nevertheless showed an increase. The average weekly in-patient cost was £3 0*s.* 11*d.*, a reduction of 6*s.* 6*d.* The facilities for adult patients to engage in handicraft under trained instruction have been so satisfactory that they have been extended to the children. The honorary surgeons now have the first call on the beds in two of the single-bed wards.

Fewer Rheumatic Patients at Bath.—The report for 1931 of Bath Mineral Water Hospital records a fall in the number of patients admitted from 1353 in the previous year to 1235; the stay rose from 39 to 41 days. The reduction is attributed in the main to "the determined effort that is being made to treat rheumatic disease not only at the recognised spas, but also at such an important centre as the Red Cross Clinic in London." The new diathermy apparatus at the hospital has had to be doubled, and a room has been arranged and apparatus provided for the examination of throats.

translated and edited Rambousek's "Industrial Poisoning" and also wrote, in collaboration with Sir Kenneth Goadby, a work on Lead Poisoning and Lead Absorption. He lectured on industrial poisons in the London School of Hygiene and Tropical Medicine. He wrote in 1911 a short series of papers on medicine in Scandinavia for THE LANCET, which showed that the training and educational regulations in Sweden, Norway, and Denmark compared in many respects favourably with out own; he delivered the William Withering Memorial Lecture on Hygiene at Birmingham, and made many communications to scientific papers upon industrial disease, and public health; and received from the Royal College of Physicians of London the Bisset Hawkins Medal as an outstanding promoter of public health.

Prof. E. L. Collis writes: "Legge threw himself with enthusiasm into his duties, and rapidly became recognised as a leading authority on diseases of occupation. The work gave him scope to combine knowledge gathered from the past with facts observed in modern industries; for it was thus his training taught him to proceed. New data were reviewed in the light of past history; but the past was always suspect—something open to correction when it did not stand up to the acid test of newly acquired facts. As Milroy lecturer in 1906 he dealt with industrial anthrax; but his name must always be more closely associated with occupational lead poisoning. In this connexion he discovered that the main portal of entry of the poison into the body was by the lungs; he noted, in a masterly way, how the poisoning occurred in this industry and in that, not in accordance with the amount of manual contact with the metal, but in relation to the presence of dust arising from such lead compounds as were soluble in the body fluids. Upon this foundation has been built up the modern methods for preventing the generation of dust or for removing it by exhaust draughts, which have been so successful in controlling plumbism. To-day this old-time scourge has lost most of its terrors; in 1900 over 1000 cases were notified; to-day year after year fewer than 300 cases occur, notwithstanding trade expansion which has spread the risk and the influence of subsequent compensation Acts in bringing cases to light. Many to-day are the codes of regulations on the statute-book aimed at the control of this and other industrial diseases, for which he was responsible. Legge, if a disease could be prevented, held strongly and conscientiously that it must be prevented. Hence, finally, he retired earlier than he need have done from his post, because he disagreed with the provisions of the Lead Paint Act which permits the continued use of lead paints—a trade custom he held to be unnecessary and definitely dangerous. But he did not retire merely to rest on his well-earned laurels, for he had been knighted several years earlier; he turned now to extend a still helpful hand to the working man for whom he had already done so much, and became expert adviser to the Trades Union Council. During the quarter of a century he was a civil servant, Legge was member of a number of Government committees and placed his skilled knowledge before many more. Well known at home, his status was equally recognised abroad, not only in the United States and Canada where he made a lecturing tour, but also in Europe where he represented the Home Office at many international conferences.

"As a colleague, he was an ever helpful friend, always ready to consider a fresh viewpoint. His character was retiring, rather than forceful; but he never spared himself where he considered duty lay. The paths of honour and uprightness were simple for Legge to tread; he knew no others. As a young man he was a fine swimmer and skater, and was always physically active; but his life's hobby was the study of sixteenth century stained glass upon which he was an accepted authority. Here again he combined admiration for bygone art and workmanship with an appreciation of modern skill as portrayed in the windows after Burne Jones and others. This artistic side of the man came out also in his everyday work as he visited factories and saw human activity; for he maintained that grace and beauty were seen at their best as exemplified by man at work; the smith at his forge, road menders swinging sledge hammers, an anvil maker, or a coal heaver, called forth admiration while he would pause a moment to watch. He saw beauty in factory girls in their overalls, rather than among popular stage favourites. Much did he get from life, and much did he give back to his generation."

Dr. John C. Bridge writes: "The death of Sir Thomas Legge removes a pioneer of industrial medicine. To his colleagues he was never Sir Thomas, but 'Tommy.' A personality reserved to shyness and to those who did not know him perhaps apparently rude, but to us who worked with him and for him, a loyal and helpful colleague and chief. It was always interesting to go to him hoping to tell him something new and to hear him say, 'I remember in such and such a year' and then would follow a little lecture on the subject. One always felt that Legge had missed his vocation, he seemed so much better fitted for a more secluded life. An enthusiast is not always practical and Legge was an enthusiast. Sometimes one felt he did not appreciate the work one did; but though he had little use for words of thanks, he never failed to recognise and give full acknowledgement to the work of others. I remember so well saying to him one day after reading an article, 'But that is exactly what you told him (the writer), you ought to write and tell him so.' The reply was, 'So long as the facts are known, it does not really matter who makes them known. Does it?' That was the Legge we who worked with him knew—never jealous of those who learnt from his experience, and always ready to encourage the genuine worker. Industrial medicine was not his only subject of interest, and in art, music, and literature he might have become recognised as an expert, and he was an authority upon stained glass. Nothing pleased him better, after his day's work in some manufacturing town was done than to set out to paint a typical industrial scene. Industrial workers throughout the world owe much to Legge. The reduction of cases of lead poisoning in the pottery industry in this country alone is a memorial of which any man might be proud and this is due mainly to Legge's work. Generous to a degree in giving from his store of knowledge he had only these objects in view—to better conditions for the workers and to further the study of the subject to which he had devoted his life. One great regret is that he did not, when he retired from official life, set himself to write from his great experience all he knew of industrial disease. In choosing otherwise I know he felt he was learning his subject from another aspect."

Sir Thomas Legge married Norah, daughter of Mr. J. Mack, of West Grinstead, and is survived by his widow, two sons, and a daughter.

record of loss of life and often desperate injury on the highways of this country. The total figures of this ghastly record were not the end of the story. Those figures conveyed the fact that this tragedy spread far beyond its immediate surroundings to the relatives and dependants of the victims. Fortunately, public opinion, which was one of the strongest forces that could be brought to bear on this problem was now being awakened. Many advocated as the only solution of this tragic problem new legislation involving the imposition of still more severe penalties on the careless and dangerous driver. Whether such action might eventually prove to be necessary was not for him to say, but there was in their hands a most effective weapon and one which could be immediately applied—namely, the more proper observance of the law and the more rigorous enforcement of the penalties for which it provided.

THE HOSPITAL PROBLEM.

Mr. PARKINSON said that last year after the passing of the Road Traffic Act the number of accidents was considerably less, but there seemed to be a renewal of these accidents. The question of people who were injured and taken to hospitals was becoming a burning cry from every hospital in the country. It was a matter which the Minister should consider. The right hon. gentleman had great powers and he hoped he would exercise them in the interests of national safety and make the Road Traffic Act a really effective measure.

Mr. TINKER said he had had figures given to him in regard to the treatment of injured people in hospitals and the cost last year was put at more than £300.000. Hospitals complained that they were not getting anything like a fair return. He had had a letter from a hospital in his own constituency. The hospital was not a large one. Last year it cost that institution £694 to deal with accidents caused by motorists. He thought that the Road Traffic Act would go a long way towards providing a solution of this question, but this letter stated that the hospital had just received £100, or about one-seventh of the total cost of dealing with these accidents. He was wondering if the Minister of Transport was doing anything to strengthen the Act in this particular. The matter was important not only in his constituency but all over the country.

Mr. BEAUMONT said that the burden of road accidents on hospitals was a difficult problem and many of the suggested solutions were for various reasons impossible, but unless something was done to ensure that hospitals got some remuneration for the accident cases which they had to treat a great number of the smaller hospitals would have to close their doors. He asked the Minister to explore every avenue to see whether anything could be done to secure for the hospitals the assistance they so badly needed.

Mr. RHYS DAVIES said he was not so sure that cases were not being sent to hospitals to-day which were ordinarily treated by the medical practitioner before the National Health Insurance scheme came into operation. Since the medical profession had a reduction of 1s. per annum in their panel fees that might be an additional argument for the proposition he was suggesting. He would leave it there, except to say that it seemed rather curious with regard to accident cases sent to hospitals that the Automobile Association could not take this question up in respect of their members. If a member of the Automobile Association came into conflict with the law the Association paid the legal changes and if they could do that from their annual contributions they ought to contribute something towards the medical and hospital charges of their members as well.

THE ELEMENT OF NOISE.

Mr. LOVAT-FRASER said the motor-car had introduced into our life an element that had greatly reduced comfort and pleasure—the element of noise. Was the Minister of Transport doing anything to mitigate that abomination? It was said that one got used to noise and that it did one no harm after a certain time. It did do one harm. (Cheers.) We all have a certain quantity of vital force and although we were not conscious of it that vital force was being used up in resisting noise. He asked the Minister to give them a word of assurance that something was being done to meet this growing evil.

HOUSE OF COMMONS.

THURSDAY, MAY 5TH.

Climatology and Health.

Mr. MCENTEE asked the Minister of Health whether, with a view to helping the Come-to-Britain movement, he would arrange for his medical officers to make a systematic study of climatology in relation to health, of the importance of providing facilities for cures, and of the way in which psychical influences may be developed.—Sir E. HILTON YOUNG replied: Attention is paid to the subject of climatology by the medical profession, and the subject is included in the course of study for diplomas in public health. The importance of facilities for treatment at health resorts is dealt with in a report on chronic arthritis issued by my department. I do not quite follow for what purpose the hon. Member recommends the development of psychical influences.

MONDAY, MAY 9TH.

Detention of a Feeble-minded Boy.

Dr. WILLIAMS asked the Minister of Health whether his attention had been called to the case of Harold Lee, who, owing to the effects of sleepy sickness, was paralysed and crippled, and who, instead of being sent to a suitable home, was detained at Rampton, an institution for mental defectives, where he suffered ill-treatment which necessitated the removal of his right eye; and whether he would cause an inquiry to be made into the conduct of this institution in order to ensure that, in future, only cases in which radical mental defect was present were kept there.—Mr. ERNEST BROWN replied: My right hon. friend's attention has been called to this case. Harold Lee is feeble-minded and partially paralysed. He was sent, in the first instance, to a residential special school for mental defectives, his mother having stated that he was dangerous and beyond her control. Owing to his violent behaviour he could not be retained at the special school, and was ultimately sent to the special block for children at Rampton. In May last year the patient, on his own admission, dislocated his own right eye, and this injury necessitated its removal. There is no foundation for the allegation that this was due to ill-treatment. The circumstances of the case have been very fully examined, and my right hon. friend does not consider that any further inquiry is called for.

Factory Accidents in India.

Mr. MORGAN JONES asked the Secretary for India if he could give information showing the total number of persons injured in accidents in those factories in India which were subject to the Indian Factories Act in 1931, or in the latest year for which figures were available; how many of these were cases of fatal, serious, and minor injury respectively; and what was the number of persons injured in this way per 100.000 of those employed in factories coming under the Act.—Sir S. HOARE replied: The figures for the year ending Dec. 31st, 1930, are as follows:—Number of fatal accidents, 240; serious, 4115; minor, 17.429; total, 21,784. Rate per 100.000: fatal, 15·7; serious, 269·2; minor, 1140·4; total, 1425.

Mr. MCENTEE asked the Secretary for India if he would give the latest available figures showing the number of factories in India coming under the Indian Factories Act, and the number of men and women factory inspectors employed under the Act.—Sir S. HOARE replied: The number of factories in India coming under the Indian Factories Act during the year 1930 (the latest year for which figures are available) was 8148. The number of factory inspectors employed under the Act during the year 1929 was 39, of whom one (in Bombay) was a woman.

TUESDAY, MAY 10TH.

Boy's Death on Spiked Railings.

Mr. MCGOVERN asked the Secretary for Scotland if his attention had been called to the fatal accident to the boy of 8 years of age at Parkhead, Glasgow, who fell on spiked railings; and if he would consider introducing legislation to give Scottish local authorities power to prevent the erection of such railings on buildings.—Sir ARCHIBALD

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

HEALTH AND SAFETY IN MINES.

In the House of Commons on May 3rd Mr. Isaac Foot, the Secretary for Mines, said the number of accidents in mines in 1931 gave some ground for encouragement as to the progress that was being made. The number of deaths in our coal-mines last year was the lowest in the history of the Department—namely, 859. That was 0·9 per 1000 of men employed, or 3·77 for every 1,000,000 tons raised. The serious accidents were 3304—the lowest on record. The smaller accidents—involving absence from work of more than three days—were about 140,000, or 26,000 less than in 1930 and 36,000 less than in 1929. Even allowing for the smaller number employed in the mines and although they were only taking the figures for one year, yet they regarded that as very gratifying. The real tragedy of the mines was the weekly return of accidents, not the big disasters. Everything that science could do must be done to make the big disasters impossible, but the real trouble of those concerned with health and safety was the daily cases. Taking the ten years from 1920 to 1929, for every casualty that arose from an explosion there were 1103 casualties arising from other causes. The most prolific cause of accidents was falls of ground. Next to that came haulage. One day they would have protective equipment in the mines. He had no doubt that in the future the use of helmets, gloves, safety boots, and goggles would be made compulsory. He was assured by those well qualified to speak upon it that a very substantial reduction in day to day accidents could be made by such simple precautions.

ACCIDENTS TO BOYS.

A most distressing feature of the returns was the number of accidents to boys. Last year 39 boys under 16 years of age were killed and 7000 boys under 16 were disabled by injury for more than three days. There was urgent need for more education. There had been printed pamphlets and circulars and the reports of the chief inspector and the eight divisional inspectors and the Department had carried through and completed the work started by his predecessor of holding safety conferences throughout the country. He would put on record his gratitude for the assistance given by the management and owners in helping to make those conferences a success. The expenditure of the Safety in Mines Research Board during the past year was about £50,000, which had been derived from the Miners' Welfare Fund. The importance of mine lighting was, first of all, because of the predominant medical opinion that the widespread disease of nystagmus was largely due to inadequate lighting and secondly because nothing contributed more to danger in the mines than the lack of proper lighting. Some months ago he had to consider whether a new regulation should not be issued establishing a new standard of lighting. He was anxious that they should not stereotype progress. He called together the representatives of the Mining Association and the Managers' Association and asked them to give him an assurance that during the next 12 months an improvement would be effected in this respect. That assurance was very readily given and the Department's inspectors were now at work throughout the country helping the recalcitrants and those who were behind their fellows in keeping up to the standard of these proposals. At the end of 12 months they would be able to consider whether the regulation ought to be imposed or whether their purpose had been achieved otherwise.

AN AMERICAN COMPARISON.

Sir Frederick Mills said that two or three years ago he went to America and visited a typical mine in Pennsylvania run by a company which was in part a subsidiary of the United States Steel Corporation. It was one of the nearly 30 mines which were producing something like 30,000,000 tons of coal per annum. The system of working there provided ventilation on twice the scale of anything in this country. There was also better light. In that area the accidents were considerably less than in this country. He suggested that the Secretary for Mines should send a small deputation of two or three mining members and agents to see this process in operation. They could get the price of coal very materially reduced by adopting this system which would be attended with much less risk to the workpeople and give them better working conditions.

BETTER ILLUMINATION.

Mr. T. Williams said that within the past few years there had been a great demand for improved lighting in the mines. A lamp called the Wolf safety lamp had been the leading lamp and the guiding influence in the deliberations of the Mines Department. This lamp gave the highest illumination of any miner's lamp in existence at the moment. Fortunately or otherwise some parts of the lamp were imported from Germany where the lamp had been tried out for many years and had given entire satisfaction. It was in no way in competition with any other lamp. Therefore to do anything that would retard the import of this lamp would be to deny the miner increased candle power and to increase the number of accidents. As a result of the exchange situation between this country and Germany, Britis importers of this lamp were suffering a tremendou disadvantage, and on top of that they had to fac an import duty of 10 or 20 per cent. which had well nigh put this particular firm out of existence s far as supplying lamps to this country was concerned He wished to know what the Mines Departmen had done to insist upon the Advisory Committe looking into this matter immediately and removing th duty. He had a report from an eminent expert on th question of nystagmus which gave proof beyon any shadow of doubt that as a result of the use of thi type of lamp miner's nystagmus had been reduce in many mines and would be reduced in the futur

THE SECRETARY'S REPLY.

Mr. Foot, replying to the debate, said that th question of the German safety lamp mentione by Mr. Williams must go before the Import Duti Advisory Committee. He had no power to interfer but the Department suggested that the importe might make representations to the Advisory Committe and if they communicated with the Department the would be happy to give them such information as w at their disposal.

NATIONAL HEALTH INSURANCE BILL.

On Thursday, May 5th, Sir E. Hilton Youn Minister of Health, presented the National Heal Insurance and Contributory Pensions Bill. Th measure amends the enactments relating to Nation Health Insurance, amends the Widows', Orphans and Old Age Contributory Pensions Act, 1925, b making provision for the payment of pensions ther under in respect of the insurance of persons wh cease to be insured within 12 months before deat or before attaining the age of 65, and modifies th statutory conditions applicable to such persons in th case of persons who, after ceasing to be insure again become insured.

The Bill was read a first time.

ROAD ACCIDENTS.

In the House of Commons on May 6th Mr. Pybu Minister of Transport, said he must touch on o point which was ever present in his mind and in th of the Home Secretary—namely, the appalli

Dr. E. Meinicke has been made an honorary professor in the University of Münster in recognition of his services to syphilology.

British Dental Hospital.

Sir Norman Bennett will preside at the annual meeting f this hospital to be held at the rooms of the British Dental Association, 23, Russell-square, W.C., at 8 P.M., on Thursday, May 19th.

Radium Institute, London.

Lord Dawson has been elected a member of the committee f this institute.

Research Defence Society.

Sir Arthur Keith, F.R.S., will deliver the Stephen Paget memorial lecture at the annual general meeting of this ociety, which is to be held at 3 P.M. on Wednesday, June 15th, in the lecture hall of the London School of Hygiene and Tropical Medicine, Keppel-street, W.C.

Malcolm Morris Lecture.

The fifth Malcolm Morris memorial lecture will be given under the auspices of the Chadwick Trust in the lecture hall of the Royal Society of Arts, John-street, Adelphi, London, at 5.15 P.M. on Monday, May 23rd. The lecturer will be Sir Ernest Graham-Little, and his subject Dermatology as an Outpost of Medicine.

Epsom College Royal Medical Foundation.

The Council of the College will shortly award a " France " pension of £30 a year to a duly qualified medical man of not less than 55 years of age. If the candidate is a single man or a widower, his income, independent of any allowance from the College or from the Royal Medical Benevolent Fund, must not exceed £100 per annum. If he be married, the combined income of himself and his wife must not exceed £150 per annum. Forms of application should be obtained forthwith from the Secretary, Epsom College, 49, Bedford-square, W.C.1, and must be returned, completed, to him not later than June 15th, 1932.

British Health Resorts Association.

At a conference held at Newquay last week-end it was resolved that a medical committee for the county of Cornwall should be formed to coöperate with the other committees in the south-western region of England and with the central organisation. Mr. J. C. Williams, Lord-Lieutenant of Cornwall, presided at the opening of the conference, and the speakers included Dr. F. G. Chandler, Dr. Fortescue Fox (chairman of the medical advisory committee of the Association), Dr. A. G. P. Hardwick (medical officer of health for Newquay), Sir Arthur Carkeek (chairman of the Cornwall County Council), Major Hilgrove McCormick (secretary of the Duchy of Cornwall), and Dr. W. Langdon Brown. Visits were paid to Falmouth, Penzance, Land's End, and St. Ives.

A regional conference of the Association will be held at Llandrindod Wells from May 20th to 23rd. The chairmen at the two sessions on Saturday, the 21st, will be Sir Humphry Rolleston and Sir William Willcox. On Sunday the conference will be entertained by the mayor and corporation of Aberystwyth.

Births, Marriages, and Deaths

BIRTHS.

Astley Cooper.—On May 2nd, at White Cross Nursing Home Edgbaston, Birmingham, the wife of T. Astley Cooper M.B., Ch.B., of a son.

Johnson.—On May 2nd, the wife of Athol J. Johnson, M.B., B.Ch. (W.A.M.S. reserve), of a son.

Parry.—On May 3rd, the wife of Wilson E. C. Parry, M.R.C.S., L.R.C.P., The Limes, Ampthill, Beds, of a son.

Shaw.—On May 7th, at Welbeck-street, the wife of Wilfred Shaw, M.D., F.R.C.S., of a son.

MARRIAGES.

McKinstry—Holman.—On May 7th, at All Souls' Church, Loudoun-road, N.W., William Kilbourn McKinstry, M.A. Camb., M.R.C.S. Eng., L.R.C.P. Lond., to Sibyl Mildred, second daughter of Dr. and Mrs. F. Kay Holman, of Avenue-road, Regent's Park, N.W.

Roche—Briggs.—On May 7th, at the Register Office, Kensington, Alex. E. Roche, M.D., M.Ch., F.R.C.S., to Cicely Mary, only daughter of Mr. and Mrs. Briggs, of 21, Wellington-road, Enfield.

DEATHS.

Gray.—On May 6th, at Dalreoch, Bournemouth, Alexander Gray, M.A., LL.B., M.D.

Legge.—On May 7th, at Wintergreen, Warlingham, Sir Thomas Morison Legge, M.D., C.B.E., Medical Adviser to the Trades Union Council, late of the Home Office, aged 69.

McClelland.—On April 13th, at Llwynwern, Dowlais, Glam, Robert Sloan McClelland, M.D.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, May 17th.—5 P.M., Special Meeting of Fellows: Nomination of Officers and Council. 5.30 P.M., General Meeting of Fellows: Ballot for election to the Fellowship.

Thursday.—5 P.M., Dermatology. (Cases at 4 P.M.) Annual General Meeting. Cases: Dr. H. W. Barber: 1. Unilateral Scleroderma Associated with Atrophy of the Subcutaneous and Muscular Tissues. 2. Sarcoid. Dr. H. D. Haldin-Davis: 3. Dermatitis Repens. Dr. Norman Burgess: 4. Pruritus Scroti Associated with Multiple Sebaceous Cysts. Dr. W. N. Goldsmith: 5. Epithelioma Adenoides Cysticum. 6. Cheilitis Exfoliativa. 7. Leiomyoma (photomicrographs). Other cases will be shown. 8 P.M., Neurology: Pathological Specimens. 8.45 P.M., Annual General Meeting.

Friday.—5.30 P.M., Physical Medicine. Annual General Meeting. 8.15 P.M., Obstetrics and Gynæcology: Annual General Meeting. 8.30 P.M., Radiology. Annual General Meeting. Slides illustrating cases of radiological interest will be shown by Dr. H. Courtney Gage, Dr. R. Fawcitt, and Dr. G. B. Bush.

ROYAL MICROSCOPICAL SOCIETY, B.M.A. House, Tavistock-square, W.C.

Wednesday, May 18th.—At 5 for 5.30 P.M., Prof. Hamilton Hartridge: 1. A Microscope Projector for Making Drawings. 2. A Microscope Projector for Lecture Purposes. Dr. P. R. Peacock, and Dr. L. Woodhouse Price: On the Cinematographic Examination of Serial Sections as an Aid to Histology.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE (Manson House, 26, Portland-place, W.),

Thursday, May 19th.—8.15 P.M., Dr. F. W. O'Connor (New York): A Paper on the Ætiology of the Disease Syndrome in *Wuchereria bancrofti* Infections. Demonstration at 7.45 P.M. arranged by Dr. O'Connor.

CHELSEA CLINICAL SOCIETY.

Tuesday, May 17th.—8.30 P.M., preceded by a Dinner at 7.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.), Mr. Edward Mitchell will open a Discussion on Recent Developments in Domestic Architecture.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Thursday, May 19th.—2.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Quarterly Meeting. Dr. Edwin Goodall: The Exciting Cause of Certain States of Disease at present classified under " Schizophrenia " by Psychiatrists may be Infection.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.

Thursday, May 19th.—8 P.M., Annual General Meeting. Dr. J. C. Mottram: 1. On the Relationship of Beta and Gamma Radiation in the Treatment of Tumours; 2. The Action of Radium on Blood-supply—The White Reaction.

Friday.—11 A.M., Visit to the X ray department of St. Bartholomew's Hospital. 5 P.M., Cases. 5.30 P.M., Dr. S. Cochrane Shanks: X Ray Treatment of Ringworm. Dr. P. H. Whitaker: Hepatography and Lienography by Thorium.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.1.

Monday, May 16th to Saturday, May 21st.—London Light and Electrical Clinic, Ranelagh-road, S.W. An evening course in Physical Medicine. Mons. and Weds. from 8 to 9 P.M. Demonstrations on cases.—Maudsley Hospital, Denmark-hill, S.E. Afternoon course in Psychological Medicine.—St. John's Hospital, Leicester-square, W.C. Afternoon course on Dermatology. Clinical work at 2 P.M. and 6 P.M. daily, and lectures on Mond., Tues., Thurs., and Fri. at 5 P.M.—Clinical Pathology, 10, Bedford-square, W.C. Epidiascope and Laboratory demonstration by Dr. Knyvett Gordon on Wed. at 8.30 P.M., on Anæmia. (The above courses are open only to Members of the Fellowship of Medicine.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.6.

Tuesday, May 17th.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Department. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients.

Wednesday.—10 A.M. to 1 P.M., Medical Wards, Children's Medical Out-patients. 2 to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

Thursday.—10 A.M. to 1 P.M., Neurological Out-patients Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Genito-Urinary, and Eye Out-patients. 4.15 P.M. (Lecture), Mr. Simmonds: Surgery of Joint Injuries.

Friday.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 12 noon, Medical Lecture. 2 to 4 P.M., Operations, Medical, Surgical, SINCLAIR replied: The answer to the first part of the question is in the affirmative. I am not satisfied, on the information before me, that legislation is required on this subject.

Mr. MCGOVERN asked if the right hon. gentleman was aware that since this question was put down another child had been impaled in Glasgow on spiked railings, and that numbers of workmen had slipped from roofs of buildings and had been killed in this way; and would the right hon. gentleman not consider doing something to save human life from this danger.

Sir A. SINCLAIR: I can only answer the question which has been put on the Order Paper. In that case the boy fell from a height of 30 feet, and if he had not fallen on the railings he would have fallen on the concrete pavement. If the local authority asks for powers their request will certainly be considered very carefully by the Government.

Accidents to Pedestrians.

Lieut.-Colonel MOORE asked the Secretary for Scotland whether his attention had been called to the report of the chief constable of Ayr, stating that nearly all accidents to pedestrians were caused by carelessness on the part of the injured persons; and whether he had received reports on this subject from other police authorities in Scotland.—Sir ARCHIBALD SINCLAIR replied: The answer to the first part of the question is in the affirmative. The statement of the chief constable was based on a detailed examination of the causes of accidents occurring in the county of Ayr during 1931. Some other chief constables have reported that in their districts a large percentage of accidents are due to carelessness on the part of pedestrians.

Lieut.-Colonel MOORE: Is the right hon. gentleman taking any steps in conjunction with the Minister of Transport to bring home to pedestrians their responsibility in this matter of street accidents?

Sir A. SINCLAIR: I will consider the suggestion of my hon. friend.

Experiments on Animals.

Mr. GROVES asked the Home Secretary the nature of the 12 experiments performed upon animals under Certificate A, without anæsthetics, during the year 1930 at the place No. 222 registered for vivisection; what premises constituted the aforesaid registered place; and what were the qualifications of the experimenters.—Sir HERBERT SAMUEL replied: The experiments referred to were the feeding of animals for the purpose of testing foodstuffs. The registered premises are the research laboratory of Messrs. J. and J. Colman's Carrow Works, Norwich; and the two experimenters were experienced research chemists.

Dental Treatment for the Police.

Mr. RICHARD RUSSELL asked the Home Secretary if he was aware that the provisions of his Order concerning dental treatment of the police were not being complied in the following areas: the county borough of Dewsbury, where a very low scale of fees formed the basis of the cost payable by the local police authority, the balance representing the difference, if any, between that scale and the fees of the private practitioner being payable by the officer; the city of Birmingham, where a scheme had been adopted in which no provision was made for the filling or scaling of teeth; and whether he was prepared to receive a deputation from the organisations representing the dental profession to discuss the difficulties which had arisen in connexion with the provision of dental treatment for the police.—Sir H. SAMUEL replied: I have made inquiry and cannot find that the arrangements made by the police authorities in question are in conflict with the police regulations. I will bear in mind the suggestion that I should receive a deputation, but I do not think that there is occasion for it at present.

MEDICAL NEWS

University of London.

Among appointments to the Senate for 1932–36, Lord Dawson has been reappointed by the Faculty of Medicine, and Dr. A. M. H. Gray by the General Medical Schools.

University of Edinburgh.

On May 5th the following diplomas were conferred:—

Diploma in Public Health.—*Euphemia T. Guild and *Janet C. Ronaldson.

Diploma in Psychiatry.—C. D. Bruce, *A. S. M'Culloch, and Flora M. Stewart.

Diploma in Tropical Medicine and Hygiene.—*J. E. Dovey, *J. M'K. A. Lowson, and Thomas Menzies.

* = In absentia.

Royal College of Physicians of Edinburgh.

At a quarterly meeting of the College on May 3rd, with Dr. Robert Thin, the President, in the chair, Dr. William Lindsay Lamb (Aberdeen) took his seat as a Fellow, and Dr. John McIntosh Morgan (Dundee) was elected to the Fellowship. Sir Norman Walker was elected a representative of the College on the committee of management of the Triple Qualification. Dr. A. Fergus Hewat was elected a trustee of the College. Dr. Edith Kate Dawson was awarded the Lister Fellowship for original research.

Marie Curie Hospital.

The annual meeting of this hospital was held on May 6th, Miss Chadburn, M.D., the chairman of the board of management, presiding. Sir Cuthbert Wallace spoke on radium therapy and on the good work being done at the hospital, and Mr. G. K. Chesterton then proposed the re-election of the board of management. The report showed that since the Marie Curie Hospital Clinic was begun in 1925, over 700 cases of uterine cancer have been treated with radium, and during 1931, 145 of these cases were treated; also 29 cases of cancer of the breast, 6 of cancer of the rectum, and 152 cases of non-malignant uterine hæmorrhage. Nearly 80 per cent. of the uterine cases applying at the clinic are advanced when first seen. Special appreciation was expressed by Dr. G. Hurdon, the director of research, of the work of the Follow-up Committee organised by Lady Fletcher; a very large proportion of the patients treated during the whole life of the hospital have been traced, and are periodically visited if they do not report progress. The charges for beds in the private wards are from 5 to 15 guineas per week, according to accommodation; and patients in the general wards contribute up to 3 guineas weekly according to their means.

Institute of Medical Psychology.

The annual meeting and luncheon of this Institute (formerly the Tavistock-square Clinic) will be held at the Hotel Great Central, Marylebone-road, London, N.W., from 12.15 to 2.45 P.M. on Tuesday, May 31st.

National Association for the Deaf.

The Lord Mayor of London, Sir Maurice Jenks, will preside at the eighth annual meeting of this association, which will be held at the Mansion House at 3 P.M. on Friday, May 27th. The speakers will include the Archbishop of Canterbury and Lord Charnwood.

London Hospital Medical College.

A course of six lectures on the Structure of Molecules in Relation to Biology and Medicine will be given by Dr. J. R. Marrack in the Bearsted clinical theatre of the London Hospital at 5.15 P.M. on Tuesdays and Thursdays from June 14th to 30th. The course is open to students of London University and to members of the medical profession.

Fellowship of Medicine and Post-Graduate Medical Association.

Four similar "refresher" courses in medicine, surgery, and the special departments will be given at the Prince of Wales's General Hospital, Tottenham, from May 23rd to June 4th, June 6th to 18th, June 20th to July 2nd, and July 4th to 16th. There will be lectures and demonstrations daily from 10.30 A.M. to 5.30 P.M., with instruction in the out-patient departments. Antenatal demonstrations will be given at the Royal Free Hospital by Dame Louise McIlroy at 5 P.M. on Wednesdays, June 1st to 22nd. An all-day course in gynæcology will be held at the Chelsea Hospital for Women from June 6th to 18th, and one in diseases of the chest at the City of London Hospital, Victoria Park, from June 6th to 18th; there will also be a week-end course on diseases of the chest at the Brompton Hospital, on June 25th–26th. A series of three epidiascope and laboratory demonstrations will be given by Dr. Knyvett Gordon at 10, Bedford-square, at 8.30 P.M., on Wednesdays, May 18th and 25th, and June 1st. The subjects will be Anæmia, Hæmorrhage, and Splenic Enlargement. Three lectures on Epidemic Encephalitis will be given by Prof. Arthur Hall, at 8.30 P.M., on Thursdays, June 2nd, 9th, and 16th. The first and last lectures will be delivered at 11, Chandos-street, W., and the second (with a cinema demonstration) at Bush House, Aldwych. All courses and lectures are open only to members of the Fellowship of Medicine, whose office is at 1, Wimpole-street, W.1.

NOTES, COMMENTS, AND ABSTRACTS

THE HEALTH OF HENRY VIII.

Mr. Frederick Chamberlin, who has already written about the Private Character of Queen Elizabeth, now publishes a similar volume about her father King Henry VIII.[1] He has collected his facts from many sources, chiefly the State papers in England, France, Spain, and Italy, and has produced a graphic picture of Henry as a man. The chief interest for medical readers is the attempt to answer the often repeated accusation that the King had acquired syphilis and that his comparative failure of issue with the consequent matrimonial troubles was due to this cause. The conclusion at which Mr. Chamberlin arrives after a consideration of the facts now attainable are that at the best a verdict of Acquittal and at the worst one of Not Proven must be given. Born in 1491, six years after the battle of Bosworth Field, Henry was the second son and third child of Henry Tudor and Elizabeth of York, his father being 34 and his mother 26. Like his contemporary Gargantua he came into the world with the physique of a giant, broad and lusty, a mighty trencherman, assertive, proud, bubbling over with high spirits, and yet as Erasmus says of him at the age of 8, with something of Royalty in his demeanour and having a certain dignity combined with a singular courtesy. A musician by heredity, he was a regular chorister at the Chapel Royal at 10, and before he was 12 had written many pieces of Church music. Throughout his life he was an accomplished player on every kind of musical instrument from the organ to the flute. From early youth until the age of 44 he was a keen and constant dancer. The Spanish Ambassador, writing of him at the age of 16, says, "there is no finer youth in the world. He is already taller than his father and his limbs are of gigantic size." He was 6 ft. 2 in. in height when he was 23, measuring 42 in. round the chest and 35 in. round the waist. During the whole of his active life he was a mighty hunter, shooting deer with the crossbow, and a champion jouster when jousting was the national sport of the nobility of England and France. He fought in plate armour both on foot and mounted, and by sheer physical force could overthrow his adversary similarly accoutred. He was nearly killed at the age of 34 whilst tilting with the Duke of Suffolk. Riding with his visor up in a new helmet of his own invention the Duke's lance was shivered against the King's forehead and from this time onwards he began to complain of headaches. Ten years later, on Jan. 24th, 1536, the King being mounted on a great horse at Greenwich to run at the lists, both man and horse fell so heavily that all thought he was dead. It was reported to the French King that he lay without speaking for two hours and had not improved in consequence of the fall.

The state of Henry's health was a matter of vital importance in international politics, and the accredited agents made careful reports to their respective governments whenever he was ill. There was, however, very little to say, for he was singularly healthy until he reached middle age. A few colds in the head, one with hoarseness; measles or small-pox in 1514; a slight fit of ague in 1539 and toothache from time to time is all that could be stated about him, except that a trouble in connexion with his leg is mentioned on March 24th, 1537, when he was 45 years of age. The physicians at some unknown date previously had ordered an issue to be made. The issue never healed and eventually became an ulcer, which was occasionally painful, and on two occasions, once in 1538 and again in 1541, gave rise to symptoms possibly associated with an embolus. It was probably of the nature of a varicose ulcer, says Sir D'Arcy Power, to whom the question was referred as a point of some historical significance. This appears a likely explanation, for Sir Geoffrey Pole reported in November, 1538, that the King "had a sore leg that no poor man would be glad of." Throughout the medical record there is no mention of a mercurial course, a method of treatment which was well understood and was always advised by the surgeons of the period if there was the least suspicion of syphilis. The course took many weeks from beginning to end and could not have remained unknown to the Court. It is certain therefore that the King's physicians did not consider the ulcers to be syphilitic.

The obstetric history also bears out the non-syphilitic character of the abortions which occurred in the consorts of the King. Dr. J. W. Williams, professor of obstetrics at the Johns Hopkins University, believes that "no one has yet adduced evidence that syphilis is an important factor in the production of abortion in the first few months of pregnancy, and there is nothing in the history of Mary or Elizabeth to indicate that they had congenital syphilis." Dr. Eardley Holland reports that "there is nothing in the reproductive history of Elizabeth Blount, of Anne Boleyn, or of Jane Seymour even to suggest syphilis, and we are therefore left with the consideration of Catherine and the repeated stillbirths. Those who have investigated the causation of stillbirths are generally agreed that only about one in three cases of repeated stillbirths are due to syphilis; and in the syphilitic cases there usually occur also the births of living children with signs of the diseases either at birth or later in life. So far as I can gather there is no evidence that Queen Mary suffered at any time from congenital syphilis, nor does there appear to be any evidence that the child born in January, 1511, who lived for 52 days only, ever showed any signs of the disease." Prof. F. Williams, of the University of Pennsylvania, expresses himself more cautiously when he says "the medical history of the lives of Mary, Elizabeth, Edward and Richmond do not throw any direct light upon the question of their father being syphilitic unless one judges congenital defects and constitutional inferiority to be evidence of an inherited syphilis." No one could accuse Elizabeth of being constitutionally inferior; Mary suffered for many years from an ovarian tumour; Edward VI., like his uncle, Prince Arthur and his brother the Duke of Richmond, died of tuberculosis. It can therefore be safely assumed in the light of Mr. Chamberlin's researches that Henry VIII. did not suffer from syphilis.

CORRIGENDUM.—Dr. S. C. Dyke writes regretting that in his article on the treatment of diabetes with higher carbohydrate diets, appearing in THE LANCET of last week, he confused Dr. F. M. Allen, of New York, the founder of the modern treatment of diabetes, with Dr. F. N. Allan, of the metabolic department of the Mayo Clinic.

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[1] The Private Character of Henry VIIIth. By Frederick Chamberlin, LL.D. London: John Lane, The Bodley Head, Ltd. 1932. Pp. 390. Illustrated. 18s.

and Throat Out-patients. 4.15 P.M. (Lecture), Mr. Batchelor: Diseases of the Rectum.
SATURDAY.—9 A.M. to 1 P.M., Throat Operations, Medical and Surgical Wards, Surgical and Children's Medical [illegible] ctures at 4.15 P.M. on Mondays, and Fridays are open to all without fee.

NATIONAL HOSPITAL, Queen-square, London, W.C.
TUESDAY, May 17th.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Julian Taylor: Spinal Injuries.
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Neurosyphilis.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. Mr. Elmquist: Demonstration of Re-educative Exercises.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
MONDAY, May 16th.—4 P.M., Mr. V. Z. Cope: Demonstration of Surgical Cases.

LONDON JEWISH HOSPITAL, Stepney Green, E.
THURSDAY, May 19th.—4.15 P.M., Mr. J. Lauer: Dental Treatment in General Medicine.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
THURSDAY, May 26th.—3 P.M., Dr. Douglas McAlpine will demonstrate.

UNIVERSITY COLLEGE, Gower-street, W.C.
THURSDAY, May 19th.—5.30 P.M., Dr. C. S. Myers: Absurdity of any Mind-Body Relation (Hobhouse Memorial lecture).

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
THURSDAY, May 19th.—5 P.M., Dr. I. Muende: Pathological Demonstration.
FRIDAY.—5 P.M., Dr. W. Griffith: Bullous Eruptions.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, May 18th.—Mr. S. Cade: Radium in Treatment of Cancer of Prostate.

ST. MARK'S HOSPITAL, City-road, E.C.
THURSDAY, May 19th.—4.30 P.M., Mr. W. B. Gabriel: Elucidation of Rectal Symptoms (Irritation).

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.
WEDNESDAY, May 18th.—3 P.M., Dr. E. J. Roth: Radiological Investigation of the Kidney.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.
WEDNESDAY, May 18th.—4.30 P.M., Mr. M. Donaldson: Radiotherapy and Gynæcology.

ROYAL INFIRMARY, Glasgow.
WEDNESDAY, May 18th.—4.15 P.M., Dr. A. M. Crawford: Medical Cases.

Appointments

ERSKINE, W. A., M.B., Ch.B. Edin., has been appointed Medical Officer to the Post Office at Bristol (District 6).

RUSHWORTH, J. A., M.R.C.S., L.R.C.P. Lond., Assistant Tuberculosis Officer in the Liverpool Health Department.

STEWART, D., Certifying Surgeon under the Factory and Workshop Acts for Newtyle District, Angus.

London County Council: **McMAHON, T. B.**, M.D. Dubl., Assistant Medical Officer (Grade II.), St. Pancras. **WALLACE, W. H. S.**, M.B., B.S. Lond., D.P.H., Assistant Medical Officer (Grade II.), St. Luke's, Chelsea; **HEATHCOTE, Columba**, M.B., B.Ch., B.A.O. Dub., Assistant Medical Officer, (Grade II.), St. Benedict's; **MASON, J. H.**, M.B., B.S. Lond., Assistant Medical Officer (Grade II.), Archway; Hunter, A. I., M.B., Ch.B. New Zealand, Assistant Medical Officer (Grade II.), St. Mary (Islington); Hill, R. A., M.B., B.S. Lond., Assistant Medical Officer (Grade II.), Highgate.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Sen. and Jun. H.S. At rate of £150 and £120 respectively.
Banbury, Oxon, Horton General Hospital.—Res. M.O. At rate of £150.
Barrow-in-Furness, North Lonsdale Hospital.—H.S. £175.
Bedford County Hospital.—Second H.S. At rate of £140.
Birmingham and Midland Eye Hospital, Church-street.—Two Out-patient Officers. Each 1 guinea per session.
Birmingham, Queen's Hospital.—Surgeon for Out-patients. £50.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Bristol, City and County of.—Asst. M.O.H. £500.
Bristol General Hospital.—Hon. Obstet. Phys. and Gynæcologist, Hon. Asst. Obstet. Phys. and Gynæcologist, also Hon. Surg. and Hon. Asst. Surg.
Bristol, Queen Victoria Jubilee Convalescent Home.—Surgeon. £120.
Buxton, Derbyshire, Devonshire Hospital.—Asst. H.P. At rate of £150.
Camberwell House, London, S.E.—Third Asst. M.O. £300.
Cardiff, City Lodge Institution.—Asst. M.O. £150.
Cardiff, Welsh National School of Medicine.—Chair of Obstetrics and Gynæcology. £300.
Carlisle [illegible]
Chester, [illegible] 00.
Chester [illegible]
Chester [illegible] £150.
City of [illegible] Res. M.O. At rate of £80 to £100.
Colchester, Essex County Hospital.—Asst. H.S. £120.
Coventry and Warwickshire Hospital.—Res. Cas. O. £125.
Cumberland, Blencathra Sanatorium, Threlkeld.—Asst. Med. Supt. £300.
[illegible] *ry.*—Ophth. H.S. £150.
[illegible] H.S. At rate of £175.
[illegible] Welfare M.O. £500.
[illegible] £450.
East Ham County Borough.— [illegible]
Edmonton, Edmonton and [illegible] *street.*— Consultant Neurologist. [illegible]
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., Obstetric Asst. Also three H.S.'s. Each at rate of £50.
Evelina Hospital for Sick Children, Southwark, S.E.—H.P. At rate of £120.
Glasgow Royal Mental Hospital.—Physician Supt.
Glasgow University.—Tennent Chair of Ophthalmology.
Glasgow, West of Scotland Neuro-Psychiatric Research Institute.—Director. £850.
Gloucester, Gloucestershire Roy [illegible] Surgeon.
Hospital for Sick Children, [illegible] *.C.*—Part-time Jun. Cas. O. At r[illegible] and H.S. Each at rate of £100.
Hounslow, Heston and Isleworth U.D.—Asst. M.O.H. and Schoo[illegible] M.O. £500.
Ilford, King G [illegible] At rate of £100.
Ipswich, East [illegible]
Kidderminster [illegible]
Kingston-upon- [illegible] *Hospital.*— [illegible] rate of £100.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.
Liverpool, Smithdown-road, Hospital.—Res. Asst. M.O.'s. Each £200.
L.C.C. District 11, Area IX., Deptford.—Temp. District M.O. £210.
London Light and Electrical Clinic, Ranelagh-road, S.W.—Hon. Consultant Gynæcologist.
London University.—Graham Scholarship in Pathology.
Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.
Manchester.—Asst. M.O. for Crossley Sanatorium, Delamere Forest, Cheshire. £200.
Manchester, Ancoats Hospital.—H.P. At rate of £100.
Manchester Babies Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £50.
[illegible] *-road, E.*—Cas. O. £100. Also [illegible] hroat Department.
[illegible] st. M.O. for Harmondsworth [illegible] Vaccinator.
[illegible] H.S. £175.
[illegible] *tal.*—Res. H.S. £150.
[illegible] *st India Dock-road, E.*—Second [illegible] O. £150.
[illegible] *pital, Marylebone-road, N.W.*— [illegible] Dist. Res. M.O. At rate of £80.
Queen Mary's Hospital for the East End, E.—Res. M.O. At rate of £200. Also Cas. O., H.P.'s and H.S.'s. At rate of £150, and £120 respectively.
Reading, Royal Berkshire Hospital.—H.S. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. At rate of £150.
Samaritan Free Hospital for Women, Marylebone-road.—Hon. Surg. to Out-patients.
South London Hospital for Women, Clapham Common, S.W.—M.O. in charge of Venereal Diseases Clinic.
South Shields, Harton Hospital.—Two H.S.'s. £150.
Surrey C.C.—Asst. M.O. £600.
Truro Royal Cornwall Infirmary.—H.S. £170.
Ventnor, I. of W. Royal National Hospital for Consumption.—Sen. Asst. Res. M.O. £100.
Wakefield, West Riding of Yorkshire C.C.—Asst. Tuber. O £500.
Warrington Infirmary and Dispensary.—Jun. H.S. £175.
West End Hospital for Nervous Diseases, Welbeck-street, W.—Hon. Anæsthetist.
Wrexham and East Denbighshire War Memorial Hospital.—Hon. Ophthalmic Surgeon.

The Home Secretary gives notice of a vacancy for a Medica Referee under the Workmen's Compensation Act for th Atherstone and the Lichfield, Stafford, Tamworth, an Uttoxeter County Court Districts. Applications for th post should reach the Private Secretary, Home Offic Whitehall, London, not later than May 28th.

POPLAR HOSPITAL FOR ACCIDENTS.—The trustee of the Bernhard Baron estate have given £10,00 to this hospital to be spread over a period of fiv years. It is to be allocated to the fund for rebuilding th out-patients' department. This work is likely to cos £30,000, and at least another £10,000 will still be neede to complete it.

ADDRESSES AND ORIGINAL ARTICLES

HE CONTROL OF CARBOHYDRATE METABOLISM.[*]

J. J. R. MACLEOD, M.B. ABERD., D.SC., LL.D., F.R.C.P. LOND., F.R.S.,
PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF ABERDEEN.

HAVE chosen as the subject of this year's Linacre ure one in the study of which there has always ı the closest collaboration between physician and erimentalist. Perhaps more than in any other ase have the problems arising in the clinical estigation of diabetes been helped towards solu- by the discoveries of the laboratory. and the arches through which these have been made e, in many instances, been inspired and cted by what the physician has observed at the side.

o the physiologist the problem of the control of metabolism of the carbohydrates has a further erest. since it seems to him that its solution must the first step towards revealing the mechanism of tabolism in general. This mechanism is no doubt tly dependent upon the balance established at h stage among the various substances which are ng constantly built up and broken down, in a state dynamic equilibrium. But. whilst this is intelli- le when we restrict our consideration to processes urring in simple solution within a single cell, ere remains to be explained how coördination is ected between these processes in different cells in dely separated organs. or even in different regions the same cell. It is conceivable that in metabolism e rate of reaction at any of the intermediary stages capable of being altered by something affecting ther the activity of the enzyme that controls it the solution pressure of the reacting substances. ne or other of these may be influenced either through e nervous system or by hormones. The nervous stem may alter the rate of change through its ntrol over the intimacy of contact between enzyme nd substrate, as by increasing or decreasing the ermeability of the intracellular barriers which old the two apart, and hormones may influence either for the same reason or because of an ctivating or inhibiting influence on the enzyme self.

Since most metabolic processes, especially those f protein and fat, appear to proceed at a steady ate, as evidenced by the constancy of the excretory products under basal conditions, it is unlikely that nervous control can play any significant rôle in their regulation. But there are certain processes of carbohydrate metabolism in which this method of control may be important. the most outstanding being the chemical changes which accompany muscular activity. When the glycogen of the muscles becomes used up in the production of lactic acid, the supply is replenished by glucose derived through the blood from the liver. Our first question in the control of carbohydrate metabolism is, therefore, how is this correlation between muscles and liver effected ? When the muscles contract, do they set up through their sensory nerve-endings impulses which, acting by way of some nerve centre, stir up the liver to produce more sugar ? Or is the process purely a chemical one in the sense that when the sugar of the blood becomes used up to meet the increased demands of the muscles for material out of which to replace their glycogen, the resulting hypoglycæmia stimulates sugar production in the liver, either by a direct action on its cells, or indirectly by influencing the secretion of some hormone which then has this effect ? However mediated, the control between the requirements of the muscles for glucose and its production by the liver must be a finely balanced one, as is well illustrated both by the constancy of the blood-sugar level during moderate exercise and by the small extent to which the percentage of glycogen in the muscles may be decreased even after the exercise has been long continued (Hershey and Orr[1]).

The aim of the physiologist is essentially to resolve general questions such as these into specific problems capable of being investigated by experimental methods. If, as Pflüger[2] first suggested, the correlation between muscular activity and carbohydrate metabolism is of the nature of a nerve reflex, causing alterations in the rate of sugar production in the liver, then it should be possible to demonstrate the efferent nerve control of this process, and the actual problem first to be considered concerns the method to be used for ascertaining the rate of sugar production.

Significance of Changes in Blood-sugar Level.

The conditions met with in the phenomena involved in the regulation of the blood-sugar level are far more complex than those we have to deal with when studying the activity of some gland which discharges its secretion through a duct. since the sugar is added to the large volume of blood which circulates through the liver. Alteration in the rate of production of sugar can be detected only when it is sufficiently great to cause a measurable change in concentration, and even then it is not permissible to infer that this is the factor involved unless the possibility of a change in concentration through migration of sugar from the blood into the tissues has been ruled out. The percentage of sugar in the blood. in other words, is merely a balance between production and loss. If the rate of either of these is known to be constant, changes in the sugar concentration must reflect alterations in the speed of the remaining process. When muscular activity is at its lowest and is uniform, as indicated by constancy in the consumption of oxygen—the basal state—a change in the blood-sugar level would suggest an alteration in the rate of sugar production by the liver and. conversely, when the latter is constant, as is presumably the case after the absorption of food from the alimentary canal is completed—the post-absorptive state—changes in the level must be the reflection of variations in the rate of utilisation of sugar by the tissues. That this behaviour of the blood-sugar level is the most important index we have of the state of carbohydrate metabolism has been amply confirmed through practical experience. When in the basal state the level is found to be higher than its average, one or other of the processes of carbohydrate metabolism is certainly disturbed, and the onset of this disturbance may be revealed by observing the extent to which the level becomes raised by adding sugar to the blood directly, or by the alimentary tract.

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[*] The Linacre lecture of St. John's College delivered at Cambridge on May 6th.

MENTAL DISEASES IN THE NEAR EAST.

THE pioneer work of Dr. John Warnock among mental sufferers in Egypt is paralleled by that of the less well-known Lebanon Hospital for Mental Diseases in Syria, Palestine, and the surrounding countries during the last 32 years.

The report of Prof. Watson Smith, who has been medical director for 23 years, was presented at the annual meeting of subscribers held in London on May 4th. From a small beginning, this voluntary hospital has become one of the most important branches of the public assistance and medico-legal services of Syria, and its benefits to the individual are indicated by the fact that 3714 patients have now been under treatment there. A new house, with 40 beds, has been added during the year, bringing up the number of houses to 11, and of beds to 240. The patients show great variety of race and religion, and range from the rich and influential to the destitute and nameless. During the year 154 were admitted (112 men and 42 women), making 373 under treatment (237 men, 136 women), of whom 18 died, and 36 were discharged recovered, 49 relieved, and 8 not insane. At the annual meeting Dr. Doris Odlum pointed out that the proportion of recoveries was good compared with English work, also that the average duration of residence was only about one month—a much shorter time than in English mental hospitals, even in those for early nervous breakdown. Its importance as a training centre for mental nurses, on whose skill the progress of these patients so much depended, and for medical students who would later go out as doctors all over the Near East, could not be over-estimated. Dr. Watson Smith's work as lecturer in psychiatry at the University of Beirut was a most important supplement to his clinical work and teaching in the village six miles away. The hospital had passed safely through the period of the Great War, and with the help of the charitable public would surmount the Great Depression.

Dr. E. W. G. Masterman, chairman of the London committee, who presided, presented the general report, and pointed to the steady progress made year by year, and the importance of its international character in composition and in support. Drs. Percy Smith and Fortescue Fox, members of the committee since its beginning, spoke in whole-hearted support. Mr. Hourani, a Syrian member of the committee, bore witness, from personal knowledge, of the horrors from which this one and only mental hospital had saved many of his compatriots. Pastor Christol, a French missionary, told from experience of what it meant to live in Central Africa, where there was no attempt to deal with the insane; capping Dr. Odlum's account of Morocco, where these unhappy people were chained by the neck in semi-darkness in stone chambers in the heart of a city, by describing the more primitive method of abandonment in the forests. He pleaded that, later London committee, with the aid of its ... countries, should do something ...ially for its suffering insane ... ear Beirut, and the ... Wellington-road, ... iting ... ing ... he ... e

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For further information

Altrincham General Hos
of £150 and £120 re
Banbury, Oxon, Horton
of £150.
Barrow-in-Furness,
Bedford County Ho
Birmingham and
Out-patient Off
Birmingham, Queen's H
Brighton, Royal Sussex
Bristol, City and County of
Bristol General Hospital.—Hon.
Hon. Asst. Obstet. Phys.
Surg. and Hon. Asst. Surg.
Bristol, Queen Victoria Jubilee Con
£120.
Buxton, Derbyshire, Devonshire Hospital.—
£150.
Camberwell House, London, S.E.—Third Asst.

...friends
corresponded with
about difficult cases,
number of interesting ear
as well as his manuscript now
and prescriptions; the former
"The Unlearned Alchymist," 1660

Chymist"; Euonymus, "Thesaurus de Remediis Secretis," Leyden, 1555; Fioravanti's "Cirurgia," Venice 1595; "La Chymie Charitable," par Demoiselle M.M., Paris, 1674; Jorden's "Discourse of Naturall Bathes and Minerall Waters," London 1632; and Glauber's "Pharmacopœia," Amsterdam, 1674. The whole collection is the property of Lord Lovelace, a direct descendant of Peter King, the cousin to whom Locke left this half of his library; it is on loan for exhibition until about May 20th, and may be seen at Messrs. Bumpus's premises at 350, Oxford-street, London, W.1.

DIPHTHERIA IMMUNISATION: A MISSTATEMENT.

A LETTER has appeared in Kentish newspapers, over the signature of H. W. McCleery, describing the last three sentences of an annotation entitled Diphtheric Immunisation in THE LANCET of Jan. 30th (p. 252) as "an admission of the utmost significance and importance." It is clear, we wrote, that toxin-antitoxin mixtures should be given up. "This toxin-antitoxin is," the letter states, "the immunising serum in general use." As far as this country is concerned the statement is untrue. For many years past the diphtheria prophylactic used for immunisation in Great Britain has been almost exclusively prepared from toxin detoxicated by formalin (toxoid) either in combination with antitoxin or alone. After the Bundaberg accident in 1928, the already strict regulations under the Therapeutic Substances Act were made still more strict regarding the preparation and testing of this type of prophylactic. For at least two years past it is probable that no toxin-antitoxin mixtures, properly so-called, have been sold in England. Immunisation has been carried out with toxoid-antitoxin mixtures or toxoid alone. It was clearly stated in the annotation that all possible source of danger can be avoided by using, instead of toxin, the modification of toxin prepared by heating it with formalin.

THE DESOUTTER CUSHION-JOINT FOOT.

Mr. Charles Desoutter, who devised the light metal limb of which some 5000 are being delivered each year, has now put on the market a foot joint which is a definite improvement on anything hitherto supplied. Wearers of existing models find it necessary from time to time to adjust and oil the joint mechanism and to fit new rubbers in position. By the introduction between the foot piece and the leg piece of a cushion unit which requires no such attention, the normal action of the gastrocnemius muscle in walking has been closely imitated and more elasticity given to the gait. The construction is simple, the so-called cushion-joint unit being fixed to the foot by a single nut, the tightening of which does not affect the working of the joint; the nut itself is locked by a serrated washer, and the whole is sealed by a sunk disc. The action can be regulated to suit every type of amputation. The flat foot is attached to a shin piece, drawn out of a flat sheet of duralumin to avoid any danger of seam corrosion and breakage, which combines strength and lightness. The wearer of the artificial limb will certainly do well, if he can afford it, to try this new type of joint. The chief fitting centre of the Desoutter Service is at 73, Baker-street, London, W.1, with branches at ten provincial centres, as well as in Wales, Scotland, and Ireland.

MATERNITY AND CHILD WELFARE.—The National Conference on Maternity and *Child Welfare* will be held at the Guildhall, King-street, London, E.C., from July 4th to 6th. Before the conference, from July 1st to 3rd, there will be a clinical week-end for medical practitioners, ... and child welfare group ... arran ... of Health. Visits will be ... the ... Children and to the East ... d ... provisional programme of ... d ... the conference may be had from the hon. secretary at 17, Piccadilly, W.1.

t hyperglycæmia occurred only when the pons s involved. Thus in 23 experiments on fasted bbits the average blood-sugar rose to nearly 00 per cent. within four hours after decerebrating ough the pons. On the other hand, when decereation was at other levels the blood-sugar either mained unaltered or only rose slightly. These ults are shown in Table I., in which position I. cludes those regions of the brain anterior to the uber cinereum; position II. between the tuber and e upper border of the pons; position III. the pons; nd position IV. the medulla.

BLE I.—*Average Behaviour of Blood-sugar Percentage after Decerebration (decn.) at Various Levels.*

si-on f cn.	Blood-sugar percentage.						Expts.
	Before.	Immediately after.	In 1 hr.	2 hrs.	3 hrs.	4 hrs.	
I.	0·102	0·127	0·139	0·145	0·155	0·174	10
II.	0·123	0·125	0·125	0·139	0·130	0·160	6
II.	0·110	0·155	0·195	0·241	0·286	0·291	23
V.	0·109	0·137	0·123	0·135	0·131	0·126	10

The method of approach to the pons varied in ifferent experiments, being sometimes through a ephine hole in the skull and sometimes through the ccipito-atlantoid space, and from post-mortem xamination of the brains we are inclined to believe hat "the centre" is situated in the tegmentum of he pons. It is possible, as has been stated to be he case by Hiller,[11] that it is the vestibular nuclei r those having to do with muscle tone that are specially concerned. The view that the motor ucleus of the tenth nerve is the centre, as asserted y Brugsch, Diesel, and Lewy,[12] is in no way suported by our results. My colleague, Peterson, has ecently confirmed them. He has found in cats nder anæsthesia by ethyl chloride or nitrous oxide hat the blood-sugar level is only moderately raised fter decerebration in region II. In an hour or so it sually returns to the normal level but rises immeiately and continues to rise if a second decerebration s performed in region III.

The question, whether the transection owes its iabetogenic effect to stimulation of a centre or to everance of some nerve pathway, is a difficult one o answer. The former view receives some support rom the fact that a striking degree of hyperglycæmia ften follows when the transection is considerably o one or other side, or is of limited width in the midine, a mere puncture being sometimes effective, at east in the rabbit. If severance of some pathway hould prove to be responsible for the hyperglycæmia we will be compelled to conclude that impulses having a general hypoglycæmic effect (perhaps because they maintain a secretion of insulin) are constantly escending from some centre above the level of the ransection. Such a centre would have to be within the pons or the adjacent regions of the cerebellum, since, as we have seen, transection immediately anterior to this region leaves the blood-sugar level unchanged. But inasmuch as section of the medulla in the rabbit is also without hyperglycæmic effect, it seems likely that mechanical stimulation rather than destruction of some centre in the pons is esponsible for the hyperglycæmia.

Nature of Metabolic Disturbance Responsible for the Hyperglycæmia.

Provided with an experimental method by which hyperglycæmia could with certainty be induced, the question arose as to the nature of the metabolic disturbance responsible for it. In his earlier experiments on piqûre, performed before he discovered the presence of glycogen in the liver, Claude Bernard considered that the hyperglycæmia was due to excessive secretion by the liver of sugar derived from protein and fat. But this view was later replaced by one in which it was considered that the extra sugar arose from the glycogen existing in the liver at the time of performing the piqûre. The reasons for this change of view were that the glycosuria which developed when piqûre was performed on rabbits having small stores of hepatic glycogen, as a result of fasting, was less marked and of shorter duration than in well-fed ones, and that its disappearance in the latter seemed to coincide with depletion of the glycogen stores. It is probable, however, that subsidence of the irritation caused by the piqûre —perhaps through death of the nerve structures— was responsible for the disappearance of the glycosuria.

On repeating these experiments on fasting or well-fed rabbits, Donhoffer and I have found that the hyperglycæmia which follows pontine transection is as pronounced in animals having only traces of glycogen in the liver to start with as in those with large amounts. Thus, when we compare the average percentages of sugar in blood removed at hourly intervals after decerebration in a group of animals having less than 2 per cent. of liver glycogen with those in a group having over 2 per cent. the following are the results,

TABLE II.—*Average Blood-sugar Percentages at Hourly Intervals. Before and after Decerebration.*

Liver glycogen.	Normal.	Immediate.	1 hr.	2 hrs.	3 hrs.	4 hrs.	Expts.	Glycogen.
Below 2 p.c.	0·107	0·155	0·195	0·243	0·284	0·277	8	Under 1 p.c. in 4 cases.
Over 2 p.c.	0·109	0·149	0·165*	0·218	0·280*	0·287	6	Over 5 p.c. in 5 cases.

* Only 5 in average.

The hyperglycæmia is seen to have been practically of the same degree in the two groups, but the change in the glycogen percentage was very different, as will be seen by referring to Table IV.; a small reduction occurring in the fasted animals but a large one in those that were well fed. It is quite evident, in the fasted animals at least, that sugar production out of glycogen in the liver cannot account for the extra sugar in the blood, and indeed, in several of these animals, the glycogen percentage in this organ actually became increased following decerebration.

These observations show that the effects of decerebration cannot depend merely on increased production of sugar from the glycogen originally present in the liver.

What then causes the blood-sugar level to rise after decerebration? Only two possibilities remain, either (1) that the liver produces sugar from sources other than the glycogen originally present in it, or (2) that utilisation of sugar by the muscles and other tissues becomes suppressed.

It will be convenient at this stage to consider the

Puncture Diabetes.

Our problem, whether sugar production in the liver is under nerve control, thus narrows itself down to observing the behaviour of the blood-sugar curve following stimulation of the nerves and nerve centres which supply this organ. Let us in the first instance consider some of the results which have been obtained by such stimulation and later examine them in relationship to the other influences, such as those of a chemical (hormone) nature, which may exercise control over carbohydrate metabolism. In adopting this course, we are following historical precedent, since it was through the discovery, in 1849 by Claude Bernard, of puncture diabetes that the problem of the control of carbohydrate metabolism became susceptible to experimental investigation and, indeed, the whole field of experimental medicine was thrown open to the scientific explorer.

In his lectures on physiology delivered in 1855[3] this master experimentalist demonstrated on a rabbit the now famous piqûre experiment. He pushed a specially designed instrument through the cranium in the region of the occipital tuberosity, and directed its course so that it punctured the cerebellum and the floor of the fourth ventricle where the latter overlies the pons (between the roots of the eighth and tenth nerves). At the end of the lecture, urine, pressed out from the bladder, strongly reduced Fehling's solution.

This discovery of Bernard's was not haphazard. By comparing the reducing power of samples of blood taken from the portal and hepatic veins, he had previously obtained evidence that the liver secretes sugar, and the vagus appeared to him a probable nerve path for control of this function. Electrical stimulation of the vagus was not followed by glycosuria but this negative result did not daunt Bernard, for Magendie had previously observed that puncturing the origin of the fifth pair of nerves might excite the secretion of tears and saliva although this did not occur after their section. Bernard therefore asked himself the question, what would happen to sugar secretion after puncture of the floor of the fourth ventricle at the place of origin of the vagi. On subjecting this to the test of experiment, he obtained the results which we have just described. But these did not prove that the diabetogenic impulses were transmitted by the vagi. On the contrary, Bernard found when the piqûre was performed after cutting these nerves that the hyperglycæmia and glycosuria were no less pronounced than usual. When, on the other hand, the spinal cord was cut above the origin of the sympathetic fibres, piqûre became ineffective, indicating, so Bernard thought, that the diabetogenic centre must act on the liver through an efferent sympathetic pathway.

It is now recognised that disturbances anywhere in the nervous system may be followed by changes in the blood-sugar level, even psychic states, such as emotion, fright, and fear, being not infrequently associated with hyperglycæmia and glycosuria. Most anæsthetics have this effect, and among those commonly used the least disturbance in the blood-sugar level occurs with amytal (isoamyl ethyl barbituric acid) and other compounds of barbituric acid (Page [4]), although similar virtues have been claimed for chloralose. On this account, many of the recent researches in the control of carbohydrate metabolism have been performed on animals under amytal, and the practice has seemed to be further justified by the insignificant influence of this anæsthetic on the percentage of glycogen in the muscles (Cori [5]) and of lactic acid in the blood, both of which undergo considerable changes when other anæsthetics are used. It has always seemed to me that these inhibiting properties of amytal are against, rather than in favour of its use in experiments on carbohydrate metabolism. That this criticism is a valid one will be evident from the experiments done with Donhoffer,[6] which I shall now describe.

In rabbits anæsthetised by intraperitoneal injection of amytal or luminal, we performed piqûre in the neighbourhood of the vagus nucleus, either by Bernard's method through the skull or by Eckhard's, in which, prior to making the puncture, the floor of the fourth ventricle is exposed by opening the occipito-atlantoid membrane. In neither case did any increase occur in the blood-sugar level. This result impressed us all the more since I had previously found that when piqûre was performed by Bernard's method under local anæsthesia, hyperglycæmia invariably followed.

In view of the evidence which has recently been obtained of the presence in the region of the hypothalamus of a centre controlling the activities of the sympathetic nervous system (Karplus and Kriedl,[7] Houssay and Mollinelli,[8] Beattie, Brow, and Long [9]) the possibility had to be considered that this might be the chief diabetogenic centre and that its stimulation by puncture would induce hyperglycæmia even during the anæsthesia induced by amytal and luminal, since we had found that this occurred after injections of adrenaline into rabbits thus anæsthetised. We assumed that if the adrenal glands respond by secreting excess of adrenaline when the hypothalamus is stimulated, as is believed to be the case, this type of anæsthesia should not prevent the development of hyperglycæmia. In a considerable number of rabbits taken at random from the hutches, the brain was freely exposed by trephining, usually after ligation of both carotid arteries, and lesions which varied in severity from mere punctures to complete transections were made at different levels, with the result that the percentage of blood-sugar sometimes increased but without any relationship to the exact position of the lesion. The irregularity of the results offered little hope of our being able to achieve any success in localising a diabetogenic centre by such methods, and this became still more evident when it was found that pronounced hyperglycæmia might supervene in unoperated anæsthetised animals. This was noted especially when luminal was the anæsthetic used, although amytal did not always leave the blood-sugar undisturbed, as has been observed also by Underhill and Sprunt.[10]

It was evident that some other method would have to be followed in localising the centre. In deciding what this should be we were assisted by two important pieces of information, one being that hyperglycæmia often supervenes upon decerebration, and the other, that the anæsthetic effects of amytal in the rabbit quickly pass off when this drug is injected intravenously. The plan was, therefore, to perform decerebration while the animal was under intravenous amytal anæsthesia, and then to observe the behaviour of the blood-sugar in the decerebrated preparation after time had been allowed for the effects of the amytal to pass off.† The level of decerebration was varied in different experiments account for the hyperglycæmia. Even when we lect for this calculation the experiment on fasted imals which showed the most marked decrease in e percentage of glycogen, the glucose totals only 4 g., an amount which experiment has shown would ot appreciably affect the blood-sugar level when jected in solution intravenously into a rabbit over period of four hours.[6]

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† Other anæsthetics, even though causing some hyperglycæmia, might also be used for the decerebration, an interval of time being then allowed to elapse for the blood-sugar to return to normal.

Blood Lactic Acid.

The percentage of lactic acid in the blood increases fter pontine decerebration, although this does not ccur to any significant extent after decerebration at ther levels. Average results are shown in Table V.

ABLE V.—*Average Percentages of Sugar and of Lactic Acid in Blood removed four hours after Decerebration.*

Position of ecerebration.	Blood-sugar per cent.	Lactic acid mg. per cent.	Expts. averaged.
I.	0·14	0·15	6
II.	0·14	0·39	2
III.	0·27	0·89	12
IV.	0·14	0·37	5

A similar increase in lactic acid also occurs, as Cori and Cori[17] have shown, when adrenaline is injected, but in this instance a closer parallelism was found to exist between the curves representing the changes in concentration of lactic acid and sugar than we found to be the case after decerebration.

Pontine decerebration, therefore, leads to an increase in lactic acid as well as in the sugar of the blood and to a diminution of the muscle glycogen, while the liver glycogen may either increase or decrease. In the normal fasting animal the liver must be regarded as a factory for glucose, using as its raw materials lactic acid, protein, and fat, and forming glycogen as a step in the process (gluconeogenesis), whereas the muscles act as a machine in which this glucose is condensed to glycogen which yields energy when it breaks down to lactic acid. What then causes the blood-sugar level to rise after decerebration? Is the excess of lactic acid primarily responsible for the increase in sugar, being converted into it by the liver; or is the accumulation of glucose in the arterial blood due to a disturbance in the process of its migration into the tissues? For although oxidation is not interfered with, the possibility remains that conversion of the glucose into muscle glycogen becomes retarded, so that diffusion from the blood is also retarded. This possibility receives support from the experiments of Cori and Cori[18] on adrenaline hyperglycæmia, with which the hyperglycæmia caused by decerebration has much in common. These workers show by measurement of the balances of free sugar and glycogen in the entire body and calculation of the carbohydrate combustion from the respiratory exchange, both in rats and rabbits, that over-production of sugar from the liver cannot account for the degree of hyperglycæmia which actually occurs, and they conclude that "the only possibility left is . . . that the animals injected with adrenaline are unable to utilise glucose at the same rate as normal uninjected animals."[14] In support of this interpretation it is pointed out that the difference in sugar concentration which normally exists in the blood as it enters and leaves the muscles becomes less marked or disappears altogether after adrenaline injection.

It might not require any considerable degree of suppression of glucose utilisation to raise the blood-sugar level, and it is possible that what really occurs, both in decerebration and adrenaline hyperglycæmia, is a slowing up in the rate at which the muscles form glycogen out of the blood-sugar. Glycogen disappearing from the muscle as lactic acid might in the liver be converted through glycogen into glucose, and as such be added to the circulating blood. A disturbance of this nature might not reveal itself by changes either in the respiratory metabolism of the muscles or in the glycogen content of the liver. Its only effect would be, as it were, to introduce a resistance into the migration of sugar from blood to tissues and so to raise the blood-sugar level and lower the glycogen level in the muscles.

I have already wandered far enough into the fields of speculation, but having gone so far I shall venture another step, by suggesting that the accumulation in the muscle of some substance intermediary between glucose and glycogen might be responsible for the possible delay in the migration of glucose from the blood. This would mean that we have to deal with something of the nature of a balanced reaction between the concentration of sugar in the blood and that of some carbohydrate derivative in the tissues.

Relationship Between Nervous Control and the Hormones.

ADRENALINE.

Having examined the nature of the disturbances in carbohydrate metabolism which are set up by decerebration, we are now led to compare them with those caused by the two hormones, adrenaline and insulin, which have effects which, in many ways, are mutually antagonistic. In almost every particular the changes in carbohydrate metabolism which are set up by adrenaline and by decerebration are strikingly alike. This suggests the possibility that the nerve impulses which decerebration engenders act primarily on the adrenal glands so as to cause an increased secretion of adrenaline into the blood. This suggestion is not new. It was put forward in 1906 by Mayer[19] with reference to piqûre, and it has led to innumerable researches dealing with the effect of adrenalectomy on the development of piqûre diabetes. Among more recent workers, Stewart and Rogoff,[20] have demonstrated that piqûre may still be effective in the absence of the adrenals. Other observers maintain that piqûre causes excessive amounts of adrenaline to be secreted into the blood. Evans, Tsai, and Young[16] have also shown that removal of the adrenals in cats has the effect not only of greatly diminishing the hyperglycæmia which follows decerebration but also of accelerating the rate at which glycogen reaccumulates in the liver after its disappearance due to the anæsthetic.

The foregoing evidence taken as a whole seems to show that although the adrenal glands must play some rôle in the development of piqûre hyperglycæmia, they are not essential to its occurrence. It is usually assumed that the impulses which excite the gland must reach it by the sympathetic (splanchnic) nerves and it is a fact, as Pearce and I found in the dog, that electrical stimulation of these nerves after adrenalectomy did not cause hyperglycæmia, as is the case in normal animals. On the other hand, hyperglycæmia occurred when the hepatic nerves were stimulated although, in this case, there could have been no excitement of the adrenal glands.

second of these possibilities: *diminished utilisation of sugar by the muscles.* As a first step in this utilisation sugar must pass from the blood plasma into the tissues, and it would appear that the rate of this migration is determined solely by the relative concentrations of sugar in blood plasma and tissue fluid. Observations on the rate of diffusion of sugar into muscle by comparisons of the percentages of free sugar in tissues and in blood plasma support this view (Cori, &c.[13]). Very shortly after entering the tissues the sugar disappears as such, being converted into glycogen and ultimately into lactic acid, although some may be directly oxidised, as evidenced by the rise in respiratory quotient which occurs in eviscerated animals when excess of sugar is present in the blood along with insulin. Other intermediary substances such as hexose phosphates are formed in this process, but the problem of their formation does not concern us now. What we wish to know is whether changes occur in the rate of utilisation of sugar in the tissues, and in the light of present knowledge we may form a rough estimate of this by measurement of changes in: (1) the respiratory exchange, (2) the glycogen content of the muscles, (3) their lactic acid production. Let me refer briefly to the results of measurements of these in rabbits decerebrated at various levels.

The Respiratory Exchange.

The problem was to find whether the consumption of O_2 and the respiratory quotient are affected by pontine decerebration in such a manner as to indicate, in comparison with their behaviour before decerebration, that there is diminished oxidation of carbohydrate. The Douglas bag method was employed, and the procedure finally adopted was to make two respiratory observations, an hour apart, after performing all the necessary operations except actually decerebrating. The average of these two results was then compared with the results obtained after decerebration, and it was found, in four out of six technically flawless experiments, that there was no significant change either in the O_2 consumption or the respiratory quotients (Table III.).

TABLE III.—*Average Consumption of O_2 and Average Respiratory Quotient before and after Pontine Decerebration.*

—	Before decerebration.		After decerebration.	
	O_2 c.cm. per kg. and hr.	R.Q.	O_2 c.cm. per kg. and hr.	R.Q.
1	420	0·73	482	0·75
2	278	0·87	373	0·82
3	291	0·78	287	0·89
4	397	0·91	347	0·91
5	390	0·95	382	0·94
6	404	0·83	423	0·86

From this we may conclude that diminished oxidation of carbohydrate in the muscles cannot be responsible for the accumulation of sugar in the blood. The results would at first sight also seem to contradict the view, which we will examine more fully later, that increased secretion of adrenaline is the immediate cause of the hyperglycæmia. But closer examination makes it doubtful if they are of significance in this connexion. For although adrenaline may have a calorigenic effect, the minimal rate at which it must be injected intravenously to cause it in the rabbit is 0·00025 mg. per kg. body-weight per minute, whereas one-fifth of this dose (0·00005 mg.) is capable of causing hyperglycæmia (cf. Cori[14]).

Glycogen Content of the Muscles.

I need not remind you that very great care must be taken in determining the glycogen content of mammalian muscle. Taking every known precaution, Donhoffer and I found that the glycogen content of the muscles of one leg removed before pontine decerebration was markedly greater than that of the muscles of the other leg removed several hours after it. Table IV., which also includes the changes in liver glycogen, will illustrate the results.

TABLE IV.—*Averages of Glycogen Percentages in Liver and Muscles before and four hours after Decerebration at Various Levels of Brain.*

—	State of animal.	Level of decn.	Liver.		Muscles.		Observations.
			Before	After	Before	After	
1	Fasting.	III.	0·93	0·68	0·32	0·23	11
2	Fed.	III.	6·41	2·90	0·67	0·50	6
3	Fasting.	I.	1·69	1·48	0·55	0·45	3
4	Fed and fasting.	II.	5·80	5·20	0·36	0·35	2
5	,, ,,	IV.	2·17	2·11	0·29	0·36	7
6	Amytal.	—	—	—	0·50	0·45	1

In No. 1 about 0·12 g. glucose per kg. and hr. set free from preformed glycogen; in No. 2, about 0·6 g. It requires 2·0 g. glucose per kg. and hr. injected intravenously to raise blood-sugar to 0·300 per cent.

In view of the effect of amytal alone we are probably safe in considering a change of ±0·05 in the percentage of muscle glycogen of no significance. When decerebration was anterior to the pons (positions I. and II.), although no increase in blood-sugar occurred, somewhat more glycogen disappeared from the muscles than after amytal alone, but it is possible that this was owing to the reflex movements which are common after decerebration at higher levels. When region IV., the medulla, was involved the muscle glycogen increased slightly but this is unusual, others having found that it remains unchanged in the spinal animal (Best, Dale, et al.[15]; Evans, Tsai, and Young[16]). In animals decerebrated at the pons, on the other hand, there was a decided reduction in the percentage of muscle glycogen, and this was especially marked in those animals in which the initial percentages were high because of previous feeding with carbohydrates.

This diminution in glycogen may to a certain extent have been due to retardation of its rate of formation out of blood-sugar, but the question also arises whether the portion which disappeared may not, by its addition as glucose to the blood, account for the hyperglycæmia. For although it is now well established that this muscle glycogen is not directly converted into glucose but into lactic acid, it is possible that the latter might become converted into sugar by being carried in the venous blood to the liver where such conversion is known to take place. It becomes of interest therefore to calculate whether sugar was mobilised from both the liver and the total musculature of the body in quantities sufficient account for the hyperglycæmia. Even when we ect for this calculation the experiment on fasted imals which showed the most marked decrease in e percentage of glycogen, the glucose totals only 4 g., an amount which experiment has shown would t appreciably affect the blood-sugar level when jected in solution intravenously into a rabbit over period of four hours.[6]

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For reasons which I do not propose to detail here we came to the conclusion that when there is widespread stimulation of the sympathetic system, the nerve stimulus set up is reinforced in its effects by a concomitant secretion of adrenaline. It is possible that this also occurs after decerebration or piqûre.

Donhoffer and I have also studied the effect of pontine decerebration in animals from which the adrenals had been removed several days previously. Typical results are shown in Table VI. In four animals in which the liver glycogen was 2 per cent. or less the blood-sugar did not rise, and there was little change in the glycogen content of liver and muscles; but in one in which about 5 per cent. was present hyperglycæmia was decided and considerable quantities of glycogen disappeared. This is the most interesting of the results, and when taken in conjunction with those of Stewart and Rogoff would seem to justify the conclusion that the presence of the adrenals is not *essential* to the development of hyperglycæmia after decerebration or piqûre, or to the rapid glycogenolysis which it usually sets up, especially in the muscles. Further observations on glycogen-rich animals are necessary before this can be accepted as final. The results obtained however do show that the presence of the adrenals makes the animal much more sensitive to the effects of decerebration, and we must suppose that this is because adrenaline is secreted in excess at the same time that the hepatic nerves are stimulated.

TABLE VI.—*Influence of Adrenalectomy on the Effects of Pontine Decerebration.*

Two Typical Experiments.

Nutritional state of animal.	Immediately after decn.	Sugar (S) and lactic acid (A.) of blood (per cent.) in—				Glycogen* (per cent.).	
		1 hr.	2 hrs.	3 hrs.	4 hrs.	Before.	After.
Fed (routine).	S. 0·10 A. 0·04	0·11 0·04	0·13 0·04	0·12 0·05	0·11 0·10	M. 0·39 L. 2·02	0·40 0·15
Specially fed.	S. 0·12	0·13	0·14	0·17	0·20	M. 0·64 L. 4·90	0·41 0·61

* Glycogen (per cent.) in muscles (M.) and liver (L.) before and 4 hours after decerebration.

Insulin.

Antagonistic to adrenaline is insulin; but there is a fundamental difference in the scope of action of the two hormones, that of insulin being apparently restricted to carbohydrate metabolism, whilst that of adrenaline is widespread, affecting every function controlled by the sympathetic nervous system. Insulin is essential to the maintenance of a normal blood-sugar level, and its absence from the body is incompatible with life. Adrenaline, on the other hand, may apparently be dispensed with, since in its absence, as in completely adrenalectomised animals kept alive by repeated injections of extracts of the adrenal cortex, the blood-sugar is at or only slightly below the normal level.‡

I need not here describe the physiological and therapeutic effects of insulin. What interests us at present is that the maintenance of the blood-sugar at a practically constant level, not only under basal conditions but also when the demands for carbohydrate by the muscles are greatly increased, as during exercise, indicates that the secretion of the isles of Langerhans must be very delicately adjusted to the requirements of the organism, and the question arises as to how the control is mediated. Do the cells of the islets adjust their discharge of insulin according to the concentration of glucose or one of its derivatives in the blood circulating through them, or are they acted on by some other hormone, the presence or the concentration of which is related to the sugar concentration, or is the adjustment mediated through the nervous system? This problem is occupying the attention of many workers at the present time, and experimental results have already been obtained which are considered to support the latter or neurogenic hypothesis. I cannot deal with these results further than to state that they are considered to indicate that increase in the blood-sugar concentration excites some centre in the brain which then discharges, through the vagus nerves, impulses increasing the secretion of insulin. Although the cross-circulation experiments of La Barre and his collaborators,[21] upon which this important conclusion depends seem to be convincing, it must be pointed out that the results await confirmation, especially by methods in which the concentration of insulin, instead of being inferred from the behaviour of the blood-sugar level, is actually measured in the blood coming from the pancreas.

But even if the secretion of insulin is controlled by the vagus nerve it does not seem likely that this can be the only means by which the nervous system exercises control over carbohydrate metabolism, for it is impossible to accept the view that decerebration hyperglycæmia could be due to a sudden cessation in this secretion. When the secretion stops, as a result of pancreatectomy, for example, it is not until some hours have elapsed that the blood-sugar rises to levels comparable with those reached after decerebration, and it is scarcely likely that this operation could lead to the discharge of impulses causing complete inhibition of the insular secretion. It is true that Clark [22] has brought forward evidence showing that the assimilation curve following the intravenous administration of glucose may be depressed in vagotomised rabbits. This would seem to indicate that inhibitory impulses are transmitted by the vagi, but even if the discharge of these should be so violently stimulated by decerebration as to bring about entire cessation of the secretion of insulin, it would presumably take some time before the hyperglycæmic effects would show themselves.

Taking the available evidence as a whole, increased secretion of adrenaline would appear to play a more important rôle in causing the hyperglycæmia and the other changes in carbohydrate metabolism which follow decerebration than would a sudden suppression in the secretion of insulin. It is now well established that much smaller concentrations of adrenaline are required to raise the blood-sugar level than to raise the blood pressure or the basal metabolism, and when we remember that sugar production by the liver is also under direct nerve control, it is quite likely that the impulses set up by decerebration act in part on the liver and in part on the adrenal secretion. It is possible, of course, that the combined effects of these two changes are amplified by a diminution in the internal secretion of insulin, although for this we have at present no evidence.

These considerations lead us to inquire whether the balance existing between the effects of these two mutually antagonistic hormones, adrenaline and insulin, may be what primarily determines the state of carbohydrate metabolism in the normal animal, rôle of the nervous system being mainly con- ıed with the immediate and rapid changes in the ıply of sugar by the liver required during muscular ivity.

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‡ It is possible, however, that these cortical extracts always contain traces of adrenaline.

continued preponderance in the concentration adrenaline has been suggested as the fundamental ıse of the diabetic state. In discussing this prob- ı some years ago, I was inclined to accept the w, advanced especially by Stewart and Rogoff,[23] it this explanation is untenable, but if we recon- er it on the assumption that it might require only slight preponderance of adrenaline over insulin, ing continuously, as would be the case when the retion of insulin is curtailed, I am by no means certain that it can be summarily dismissed.

The recent discovery of methods by which the fatal ects of adrenalectomy may be counteracted by ection of extract of the adrenal cortex may open the opportunity of subjecting this problem to e test of direct experiment. We are as yet far m understanding the underlying cause of diabetes, although all the known facts regarding this disease nform with the definition that it is one in which ere is a certain degree of deficiency of insulin in e organism, we are still left with the problem of counting for the over-production of sugar and the her metabolic disturbances which characterise it.

ffect on Nervous Hyperglycæmia of Interference with the Efferent Pathway by Section and by Drugs.

We have seen that there are several ways by which ıe nervous system might bring about a rise in blood- ıgar, and it may be of advantage to recapitulate ıose we have so far considered. They are :

1. Stimulation through the hepatic nerves of the break-)wn of glycogen already present in the liver or of the ocess of gluconeogenesis in this organ.
2. Stimulation of the internal secretion of adrenaline.
3. Inhibition of the internal secretion of insulin.

timulation through the hepatic nerves leaves out of ccount any effect on the breakdown of glycogen in he muscles, so that, at best, it could only partly xplain the changes which accompany decerebration yperglycæmia, but if, at the same time, either or oth of the humoral effects come into play all the bserved changes would be satisfactorily accounted or. The actual amount of adrenaline secreted need ıot necessarily be large if it is accompanied by a imultaneous cessation in the secretion of insulin. The possibilities which these considerations suggest nay be put to the test of experiment by blocking, ither by section or by drugs, the nervous pathways long which the impulses that control the various unctions must travel.

According to present-day knowledge, the most ikely efferent nerve pathways are the sympathetic splanchnic) to the adrenal glands and liver, and the parasympathetic (vagus) to the islands of Langerhans. The possibility also exists that the stimulus which sets up glycogenolysis in the muscles is carried by somatic autonomic nerves, the only other alternative being that the activity of this process is solely dependent upon the presence of hormones. These considerations suggest various experiments, which Donhoffer and I have tried. We found, after section of the vagi in the neck, in fasting rabbits, that decerebration did not cause the usual degree of hyperglycæmia. Thus the blood-sugar rose only to 0·156 per cent. in two hours in one such animal, and to 0·226 per cent. in four hours in another. Assuming this effect of vagotomy to be owing to severance of the parasympathetic pathway to the liver, we next tried the effect of more complete blockage by combining vagotomy with the injection of atropine (1·0 mg. followed at intervals by 0·5 mg.). In five out of six experiments of this type the blood-sugar in three or four hours after decerebration did not rise to anything like the extent usually observed, but in the remaining animal the rise was very pronounced. I mention this detail because it so happened that this was the only animal of the series in which the glycogen content of the liver was determined, nearly 4 per cent. being found. This is a high percentage for an animal that has been fasted over night, and the result suggested the possibility that the hyperglycæmia had failed to develop in the other animals because only small amounts of liver glycogen were present. In a further series of five experiments, partly on fasted and partly on richly fed rabbits, glycogen was accordingly determined, both in liver and muscles, at the beginning and end of the experiments. The results are seen in Table VII.

TABLE VII.—*Influence of Vagotomy and Atropine on Behaviour of Percentages of Blood-sugar and Glycogen of Muscles (M.) and Liver (L.) following Pontine Decerebration.*

Typical Experiments.

Normal.	Immediately after decn.	Blood-sugar per cent. in—				Glycogen per cent.	
		1 hr.	2 hrs.	3 hrs.	4 hrs.	Before.	After.
0 10	0·14	0·13	0 10	0 08	—	L. 0·45 M. 0·48	0·20 0·34
0·10	0·10	0 09	0·10	0 09	0 09	L. 0·19 M. 0 07	0·16 0·06
0 11	0·14	0·13	0·13	0·13	0·18	L. 2·53 M. 0·41	0·80 0·40
0·11	0·21	0·26	0·29	0·41	0·49	L. 12·20 M. 0·50	7·17 0·40
0·09	0 16	0 19	0·39	0·47	—	L. 16·40 M. 1·45	9·70 1·29
Averages for 10 experiments on ordinarily fed rabbits.							
0·11	0 12	0 13	0·13	0·15 (8)	0·17 (6)	—*	—*

* Glycogen unknown.

We may explain these results by assuming that when the liver contains only the glycogen which is left over as a by-product of gluconeogenesis, severance of the parasympathetic pathway renders decerebration ineffective in exciting an increased sugar discharge, but does not do so when the organ is heavily loaded with glycogen formed and stored up in it from absorbed carbohydrate. The behaviour of the muscle glycogen was much the same in the two groups of animals, and may therefore for the moment be left out of consideration. What the results do seem to indicate is that, in a physiological sense, two kinds of glycogen may occur in the liver, the one associated with the process of gluconeogenesis—perhaps as a sort of by-product—which is under parasympathetic nerve control, and the other merely a storage form for glucose into which it may be reconverted through other influences.

In view of the effect of ergotamine in blocking the motor myoneural junctions of the sympathetic, its effect on decerebration hyperglycæmia was studied, with the hope that it might prevent breakdown of the storage form of glycogen, but this is *not* the case. It seems to act much like atropine. Thus, in two experiments on fasted rabbits with only traces of liver glycogen, the injection of 0·5 mg. of ergotamine just prior to decerebration prevented the usual rise in blood-sugar.

When both atropine and ergotamine were given and the vagi cut as well, pontine decerebration had no effect on the blood-sugar level unless when large amounts of storage glycogen were present in the liver (Table VIII.). In an experiment, for example, on an animal in which the liver contained 7·9 per cent. glycogen and the muscles 1·13 per cent., the blood-sugar rose to 0·485 per cent. three hours following decerebration, and there were marked losses in glycogen in both tissues. To account for the hyperglycæmia under these conditions we must assume either that hypersecretion of adrenaline has occurred as a result of stimulation through some nerve pathway which neither atropine nor ergotamine can effect, or that the glycogenolysis is set up by the vascular disturbance which, to judge from the congestion of the *abdominal* blood-vessels, *constantly* follows piqûre or decerebration.

TABLE VIII.—*Influence of Ergotamine, and of this plus Atropine, on Blood-sugar and Glycogen Percentages following Pontine Decerebration.*

Nutritional state of animal.	Drugs used.	Normal.	Immediately after decn.	Blood-sugar per cent. in—			Glycogen per cent.	
				1 hr.	2 hrs.	3 hrs.	Before.	After.
Fasting.	Ergot.	0·09	—	0·09	0·10	0·10	L. 1·00 M. 0·67	0·45 0·39
Fed sugar.	*Ergot. + vagotomy*	*0 10*	*0·14*	*0·13*	*0·24*	*0·48*	L. *10·50* M. 1·12	*6·65* 0·90
,,	Ergot. + atropine.	0·10	0·15	0·09	0·17	0·17	L. 6·9 M. 0·7	2·67 0·65
Influence of amytal.								
Fed.	Amytal repeatedly.	0·11	0·10	0·15	*a*0·18	*a*0·16	L. 10·46	11·78
						4 hrs. 0·16	M. 1·27	0·67

a = Amytal injected.

I have laid before you these perplexing facts in order to indicate that we do not consider that demonstration of the relationship of the vagus to *decerebration hyperglycæmia does any more than* reopen the problem of the nerve control of carbohydrate metabolism. The one thing that is established is that blockage of the parasympathetic pathway prevents hyperglycæmia from developing when traces only of glycogen are present in the liver.

Action of Amytal and Other Barbituric Acid Derivatives.

There remain two other experimental findings to which I should like in concluding to call attention. The one is that amytal has exactly the same influence on decerebration hyperglycæmia as atropine, the hyperglycæmia being inhibited in fasted rabbits by its injection. Hence the confusion in the results of our earlier experiments in which amytal and luminal were the anæsthetics used. This effect is not surprising when we recall that, in animals under amytal, stimulation of the vagus fails to cause cardiac inhibition, and it may be added that stimulation of the chorda tympani causes much less than the usual secretion of saliva from the submaxillary gland. The drug evidently has a paralysing effect on the parasympathetic nervous system.

The other interesting fact is that atropine and ergotamine greatly diminish or entirely prevent the rise in the blood-sugar level which ordinarily follows the ingestion of sugar. This effect is not seen when the sugar is given intravenously, which suggests that it is possibly caused by an interference with absorption. This explanation is, however, not accepted by those who have studied the problem (Allard,[24] Pollak [25]). Although I can offer no explanation of the phenomenon, it is unquestionably of some significance that the drugs should have similar effects on both decerebration and alimentary hyperglycæmia.

But here I must stop, leaving unanswered the question with which we started, concerning the coördination between the requirements of the muscles for sugar and its rate of supply by the liver. From the evidence at present available it may be justifiable *to postulate that when the requirements are* more or less steady, the rate of sugar production is regulated by alterations in the balance between insulin and adrenaline in the blood, but when there is a sudden call for sugar to meet the demands of *great muscular activity direct* nervous stimulation of sugar secretion by the liver is set up. As to how the balance between insulin and adrenaline is adjusted, it is possible since the secretion of each of these hormones is subject to nerve control, that the sugar concentration of the blood supplying the nerve centres is the stimulus which acts on them. In the light of the experiments which I have described, these centres are probably situated somewhere in the pons, and the discharge of impulses from them, which is set up by decerebration, acts in such a way, as to cause increase in the secretion of adrenaline, and decrease in that of insulin, at the same time that *glucose secretory impulses are* discharged to the liver.

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SHEFFIELD ROYAL HOSPITAL.—It is announced that £25,000 is to be given to this hospital by miners' welfare committees in South Yorkshire for the equipment of a new X ray department. A centenary appeal for £100,000 was recently launched by the hospital to meet an overdraft of £60,000 at the bank and to carry out improvements urgently required.

ECTION OF THE UMBILICAL VEIN IN RETAINED PLACENTA.

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ANY of the dangerous complications of pregnancy the first two stages of labour can now be foreseen, due provision can be made for them. But the ical attendant is still unable to foretell what occur during the third stage.

etention (either partial or complete) of the enta is a common cause of post-partum hæmorge and strongly predisposes to puerperal infection. h retention necessitates in the first instance a lé's manœuvre with its associated shock; should fail the surgeon is compelled to undertake manual oval, a procedure performed outside the protecting ıg of the fœtal membranes and not completed hout further serious hæmorrhage.

he term "retained placenta" implies that the enta is lying unattached in the cavity of the rus and that its expulsion has not been effected ause of some abnormality; this abnormality y be either atony of the uterus following a longed labour or hour-glass contraction or pressure a full bladder. On the other hand the placenta y remain adherent, either partially or completely, hout showing any pathological cause. Totally ıerent placenta is in fact much rarer than is ıally believed: this group includes placenta reta and increta, neither of which concern us in present discussion, since they do not give rise alarming hæmorrhage or demand specialised atment.

It is convenient at this stage to summarise the ocedure adopted in the Leeds Maternity Hospital the conduct of the third stage of labour. mediately after the delivery of the child the tient is turned on her back and the cord is placed a sterile dish between her thighs. The height the fundus is noticed but the uterus is not touched less undue loss of blood necessitates the use of ntle massage to induce a contraction. In most ses the patient is left undisturbed for twenty inutes, except that the height of the fundus is served from time to time, also the presence of emorrhage. In normal cases the simple tests for e position of the placenta are made (lengthening shortening of the cord, the height of the fundus, ape, contour, and mobility of the body of the erus). If such tests reveal that the placenta is ing in the lower segment or vaginal vault, the ndus is massaged to elicit a contraction and the terus is then used as a piston to push the placenta ut of the vagina. If the tests show that the placenta as not left the uterus they are repeated at intervals f five minutes. No alarm need be felt if the placenta retained without hæmorrhage, but should the lacenta be retained and a post-partum hæmorrhage ccur this will continue until the placenta is removed nd the uterus made to contract evenly; in these ases the accoucheur's hand is forced and he is ompelled to aid the delivery of the placenta.

MANUAL REMOVAL AND ITS DANGERS.

It was formerly the custom to attempt to express he placenta by means of Credé's manœuvre, and hould this be unsuccessful to repeat the manœuvre t intervals and under an anæsthetic if necessary before resorting to the dangerous manipulation of manual removal. It must not be thought that Credé's manœuvre itself is not dangerous; the shock induced by severe compression of the uterus through the abdominal wall may result in the collapse of the patient, especially if she has lost much blood and has been sent to hospital from a considerable distance. There is in addition the possibility of tearing the placenta resulting in one or more cotyledons being left in situ.

Manual removal of the placenta is usually an easy operation because of the undoubted fact that placentæ remaining in the uterus are as a rule partially or totally separated from the uterine wall; but statistics show that the accompanying morbidity- and mortality-rates are extremely high. Thus Bourne[1] gives the figure for morbidity at 35 per cent., and Goethals[2] at 39·4 per cent. The death-rate varies from 7 per cent. to 10 per cent. according to different observers, hæmorrhage seeming to account for rather more than half the fatalities. Goethals mentions in his paper the records of the Boston Lying-in-Hospital, which show that manual removal was effected 170 times in 8182 cases with a death-rate of 8·2 per cent., brought down to 1·76 per cent. by missing out all the complicated cases. One in every four cases of removal showed signs of uterine infection according to the B.M.A. standard. The figures of Queen Charlotte's Hospital from 1906–1916 (omitting 1909, 1910, 1911, and 1915) show that the placenta was removed manually 154 times; 54 patients developed sapræmia (i.e., 35 per cent. became morbid) and there were five fatal cases, giving a mortality of 3·2 per cent.

During the last five years at the Leeds Maternity Hospital, the placenta has been removed on 87 occasions; 28 of the cases became morbid and 14 proved fatal. Two patients died before the placenta was delivered. This gives a morbidity-rate of 32·7 per cent. and death-rate of 16 per cent. It must be mentioned that these figures include a large number of emergencies, some of the patients being extremely ill on admission.

The dangers encountered are: (1) infection by micro-organisms, (2) hæmorrhage during and after the operation, (3) shock during the extraction, and (4) rupture of the uterus. The factors playing a part in the causation of sepsis are: (1) the introduction of micro-organisms, and (2) the resistance of the patient.

As previously mentioned, removal of the placenta with the membranes necessitates the introduction of the hand outside the membranes. That means the fingers come in contact with the raw placental site, where there are large open venous sinuses, likened by Bethel Solomons to incubator tubes awaiting inoculation. The micro-organisms may be carried in from outside or may be present already in the cervix and vagina. The resistance of the patient varies according to her general condition, and it is obvious that patients who have bled considerably or who have borne a long and tedious delivery probably terminated instrumentally are handicapped from the start.

The difficulty is to know how long to wait before embarking on manual removal. Goethals suggests that one should wait one hour and then try all other methods first. H. Germans[2] advises waiting from two hours onwards. In cases without hæmorrhage Polak[2] is content to leave the placenta in situ; in those with hæmorrhage he packs the uterus and the placenta with iodoform gauze which stops the hæmorrhage and eventually causes separation. It seems obvious to us that the time factor can only be taken into account in those cases without hæmorrhage, for when post-partum bleeding takes place during the third stage the indication for interference is rather the condition of the patient than the interval of time.

At this point it is interesting to mention a series of cases collected by Dr. Henry Bailey, of Horsforth (near Leeds). This consists of 23 instances of retention of the placenta, only one of which was associated with any severe degree of hæmorrhage. In all it was found impossible to obtain delivery of the placenta by manipulations short of a "Credé" under anæsthesia and so the patient was left with the placenta in situ. The placenta was delivered spontaneously after periods varying from five hours to six and a half days. Only one case showed signs of fever and that was one in which a forceps delivery had occurred with a perineal tear. These cases do not seem to agree with the findings of Hammerschlag, who says that after 24 hours the uterus becomes invaded with bacteria. However, by far the greater number of cases of retention are associated with hæmorrhage. In the previous paragraph I have recorded the statistics of manual removal and with these eloquent figures in mind we have during the past year been attempting to find some other less dangerous method of effecting the delivery of the placenta, and this we think we have found in a reconstruction of the Mojon-Gabaston treatment of injection of the umbilical vein.

MOJON-GABASTON TREATMENT.

My attention was drawn by Prof. A. M. Claye to a paper by Jarcho[3] where there is a history of the method and a description of three cases successfully treated by him. The history is briefly as follows.

Mojon in 1826 injected acidulated water into the umbilical vein and induced separation with subsequent delivery of the placenta. The result he thought to be due to (1) the sudden increase of pressure at the placental site, (2) cold transmitted to the placental site. Legros in 1828 found the method particularly efficacious in atonic bleeding. Basedow in 1829 tried the method several times and found it useless. Most in 1834 injected both veins in a case of twins. He said that the cold caused a cessation of bleeding and subsequent contraction of the uterus. Schwarz in 1835 reported good results not only in retention, but also in uterine hæmorrhage following partial separation. The method however fell into disuse because of the complete lack of aseptic precautions.

Koerting[4] reviewed the treatment in 1925, and came to the conclusion that injection of the vein makes a "Credé" unnecessary. He thinks that a previous "Credé" lessens the efficacy of the injection, but that after injection, removal by an easy "Credé" is usually successful. On the other hand he holds that in cases of profuse hæmorrhage injection is contra-indicated. This view was also expressed by Goethals, and if correct greatly lessens the value of the operation.

The technique as described by Jarcho is this. First one makes sure that the placenta is still in the uterus by using the simple tests, supplemented if necessary by a rectal examination. The requirements consist of a Record syringe, a large needle, and 200–300 c.cm. of sterile saline. The cord is thoroughly cleansed for about 8 inches near the vulva. This part of the cord is used because it is least likely to be soiled by fæces, and most likely to contain a patent umbilical vein. The saline is then slowly injected and the physician waits for the onset of uterine contractions and delivery of the placenta. This, in the three reported cases took place in 10–40 minutes.

In the summary at the end of the paper, Jarcho says: (1) The solution distends the placenta, ruptures the small veins, and forms a retroplacental hydroma, which by its mechanical action causes separation and expulsion of the placenta. (2) The method is simple. (3) No anæsthetic is needed. (4) No infection is carried to the uterus. (5) If delivery of the placenta is unsuccessful, injection makes a subsequent manual removal easy.

TEST OF THE METHOD.

The procedure used in this hospital has followed mainly that described by Jarcho; in the first few cases we used a large Record syringe, and injected the fluid slowly; the patient's pulse and blood pressure were noted before, during, and after the injection and were found not to alter. If, as Jarcho suggested, the separation of the placenta was caused by the tearing of the small veins, we thought that if the saline was injected faster there would be more likelihood of this occurring, and so the Record syringe was supplanted by Scannel's apparatus, and a large No. 20 needle introduced, such as is used for subcutaneous infusions.

Scannel's blood transfusion apparatus consists of a 20 c.cm. syringe with a three-way tap and thus overcomes the delay made necessary by the repeated disconnexion of the ordinary Record syringe. The patient is placed comfortably in bed with the lower part of the abdomen and thighs exposed, the thighs at the same time being abducted, the vulva and the surrounding skin and the cord are thoroughly cleansed with soap and biniodide spirit, and the cord placed on a sterile towel lying between the patient's legs. The needle is inserted into the umbilical vein about 6 inches from the vulva, and held in position by a ligature.

It is better to leave some undamaged cord between the needle and the vulva in case it is necessary to reinsert the needle. The injection of the saline is now commenced and it has been our aim to inject at the rate of 300 to 400 c.cm. in two and a half minutes. We have found that 350 c.cm. is about the average amount of fluid used. On completion of the injection an artery forceps is placed on the cord, the needle is removed, and the placenta is expressed if it has not been already spontaneously delivered. As the fluid enters the placenta the fundus of the uterus is felt to rise up in the abdomen and later strong uterine contractions occur. We have not deemed it necessary to await the spontaneous expulsion of the placenta but rather to aid its delivery by immediate expression, during a contraction, after the completion of the injection.

With the intention of testing the method thoroughly, most of the cases treated, and to be described, were submitted to the orthodox procedures in vogue for retention of the placenta. By this we mean that attempts at expression were made by means of a "Credé" first without, and later with an anæsthetic; and furthermore usually by more than one separate operator before injection was proceeded with. This means that the cases we have collected would all have terminated in manual removal had injection failed. What is more, according to Koerting we were deliberately jeopardising our chances of success by attempting removal by means of a "Credé" before injection.

Case Records.

Case 1.—Aged 37. Fifth pregnancy. Previous obstetrical history: (1) 3-months' abortion. (2) Normal full-time; forceps. Child stillborn (December, 1927); manual removal. (3) 3-months' abortion. (4) Normal full-time; forceps; child stillborn (August, 1930); manual removal. The Wassermann reaction had been investigated on two occasions and found to be negative.

Present pregnancy.—A living child was born naturally, premature by six weeks. The patient oozed continuously and one hour and twenty-five minutes later the placenta was still in situ. The blood pressure was 80 systolic and 50 diastolic. An attempt at "Credé" failed, and as the bleeding had momentarily *ceased, two pints of gum saline* were given, resulting in a marked increase in the blood pressure 128/60. 250 c.cm. of saline were injected by means of a Record syringe into the umbilical vein in an attempt to separate the placenta. The time for injection was 11½ minutes. There was no success, the fluid seemed to run back again alongside the cord. An anæsthetic was commenced and preparations made for manual removal. As a "Credé" under the anæsthetic proved useless, the placenta was finally removed manually.

This was a difficult operation, the placenta seemed to be firmly adherent to the uterine wall and had to be scraped away. It was pale, thin, and fibrous. On looking up the old notes it was found that a similar state of affairs had occurred in 1930. The patient was later given 20 oz. of citrated blood, *and made an uneventful recovery.*

This case is interesting in that it was the first of our series and our only failure. Her previous obstetrical history shows that she had had two abortions and two full-time difficult deliveries followed by manual removal; in neither of which had there been any suggestion of infection. The placenta was firmly adherent and in view of the later findings totally unsuited for removal by injection. The saline was injected very slowly, and was possibly given time to leak gradually away without distending the placenta.

Case 2.—Mrs. B., aged 30. Eighth pregnancy. Previous history: (1) and (2) Full-term. (3) Full-term; retained placenta; manual removal. (4), (5), and (6) Full-term. (7) Full-term; retained placenta; manual removal.

This patient was admitted in a precarious condition two hours after delivery of the baby. She was a heavy woman with œdema of the lower half of the body, solid albumin in the urine, and chronic mitral disease. The history was that she had lost continuously since the birth of the baby, and that abortive attempts at Credé's expression had been made. Her *pulse-rate on admission* was *104, B.P. 70/?,* she was cold, clammy, and gasping for air. The placenta was firmly fixed in the uterus near the fundus. The shock was treated with salines, morphia, and radiant heat; a blood donor being sent for. An attempt at a "Credé" without anæsthesia was unsuccessful.

300 c.cm. of saline were injected into the umbilical vein as rapidly as could be given, the fundus of the uterus rose in the abdomen, contractions were elicited, and the placenta was delivered into the vagina, and later pushed out into a dish. The hæmorrhage ceased and the uterus contracted well. Preparations were made for a transfusion, and this was about to be given 2½ hours later, when the patient suddenly collapsed *and died. Post-mortem examination* showed advanced myocardial degeneration. This is the only death in the series.

Case 3.—Aged 25. First pregnancy. This patient was delivered normally and continued to bleed slowly for 50 minutes, loss 1200 c.cm. An attempt at a "Credé" was unsuccessful. Preparations were then made for a manual removal and the patient anæsthetised. "Credé" was attempted under the anæsthetic but without success. 300 c.cm. of saline were injected into the umbilical vein. The uterus could be felt enlarging and contracting, the placenta being expelled with ease.

Case 4.—Aged 26. First pregnancy. Patient delivered normally but lost continuously all the time, so the fundus was controlled. As the bleeding continued, attempts were made to express the placenta using much force with both hands. The bleeding had by now amounted to 900 c.cm. in 20 minutes. 300 c.cm. of saline were injected, the time taken being two minutes. The uterus could be felt to be distending as the fluid ran in. An immediate attempt at expression had the desired result. The placenta was greyish-white in colour. There were no cotyledons. There were three hard white fibrous nodules 1 in. × 2 in., and at the edge was a band of fibrous tissue ¼ in. thick.

Case 5.—Aged 31. First pregnancy. Patient sent in as an emergency three hours after delivery with the placenta in utero following forceps extraction, with a complete perineal tear. The history of the pregnancy suggested placenta prævia. She had bled on three occasions, the last loss being profuse and occurring the day before delivery. On admission she was extremely collapsed, blanched, restless, almost pulseless, skin cold and clammy. Pulse-rate 164. Blood pressure 85/? No hæmorrhage per vaginam.

—	Blood pressure.	Pulse-rate.	—
On admission	85	Almost *pulseless.*	9 A.M.
After 1 pint saline ..	—	164	9.30–10 A.M.
	84	140	11 A.M.
After 1 pint blood ..	114–120	144–110	12 noon.

An examination was made per rectum. The vagina appeared to be empty except for what was thought to be placental tissue lying near the cervix. Abdominal tests showed the placenta to be mainly in the uterus. Only half an inch of the cord was available, the bulk having beeen torn off in attempts to obtain delivery. Mild attempts to press the placenta out of the uterus failed, and caused such extreme distress in her precarious condition that they were not persisted with. At 12.25 P.M. 300 c.cm. of saline were infused into the umbilical vein, the time taken being 2½ minutes. The placenta was expressed with ease. Even with this mild operation the patient collapsed again.

—	Blood pressure.	Pulse.	—
5 oz. blood*	80	150	—
15 oz. gum saline*..	118	116	1.30 P.M.
	110	140	4 P.M.
	110	140	6 P.M.
	110	138	8 P.M.

* As the veins were so collapsed it was found necessary to make an incision to locate one.

The placenta was large, one edge had drawn down in a long lip possibly by the head, and presumably this was the part felt in the vagina and the cause of the *ante-partum* hæmorrhage. The patient made an uneventful recovery.

Case 6.—Aged 20. Second pregnancy. Patient admitted before delivery following two abortive attempts at forceps delivery. Her condition was fair, except for an acute post-anæsthetic bronchitis. She had a small round pelvis and was having strong pains, the fœtus was dead. *Perforation* and craniotomy were undertaken under spinal anæsthesia, the perineum being torn; without any further delay the umbilical vein was injected, 300 c.cm. of saline being used, the placenta obtained and a perineal repair subsequently undertaken.

Although there was no suggestion of retained placenta in this case, it shows two valuable uses of the treatment.

(1) If the patient has bled before delivery, or has undergone difficult instrumentation, so that further loss of blood would make her condition dangerous, the accoucheur has a means at his disposal of obtaining the placenta at once. This has been undertaken with success on four occasions.

(2) In cases of severe lacerations of the vagina, which, if sutured whilst the placenta is still in utero and are liable to break down again during its delivery, the placenta may be obtained at once and the danger overcome; also the field of vision is not obscured by escaping blood lost during the normal separation of the placenta.

Case 7.—Aged 32. Fourth pregnancy. Admitted as an impacted labour. Small pelvis, large child weighing over 11 pounds. No fœtal heart heard. The later weeks of the pregnancy had been complicated by pyelitis with associated rigors. She had been three days in labour and the vaginal discharge was very offensive. Delivery was effected after perforation and *craniotomy* with a bilateral cleidotomy. At the end of 30 minutes the placenta was still in utero, there had been a continuous loss of blood, the blood pressure had fallen to 90/60. Attempts at a "Credé" were undertaken, the patient being still under the anæsthetic and although it was possible to obtain a good grip of the uterus they were unsuccessful. 300 c.cm. of saline were infused and the placenta easily expressed. One pint gum saline given, B.P. 115/70.

This case was successful, especially in view of the fact that the patient had been in labour many days, there was a foul discharge and an excessive amount of internal manipulation. The dangerous operation of manual removal was thus much to be avoided.

CASE 8.—Aged 27. First pregnancy. Forceps applied for primary uterine inertia. One hour after the delivery of the child the placenta was still in utero. She had lost 900 c.cm. of blood. "Credé" was attempted, the patient being still under the influence of hyoscine. This was not successful, the uterus was difficult to grasp as it seemed to have become acutely retroverted. 300 c.cm. of saline were injected and the placenta obtained. This patient had been treated during pregnancy for a vaginal discharge.

CASE 9.—First pregnancy. Admitted with the head delivered. The child was a macerated and peeling hydrocephalic monster. The placenta was still in utero at the end of four hours, the patient's condition being good, as there had been no bleeding. It was difficult to ascertain the position of the placenta by abdominal palpation because of the extraordinary tenseness of the abdominal walls. The fundus did not reach to the umbilicus, it was broader than long and examination per rectum showed the vagina to be empty. Attempts to obtain a grasp of the uterus were impossible owing to the muscular rigidity.

The cord was soft and discoloured. The vein was isolated by dissection and injection commenced; after the injection of 280 c.cm. the patient had strong uterine contractions, strong enough to make her wince and the placenta was literally shot out of the uterus into the bed.

The placenta was small, 13×10 c.cm., pinkish-white, without any cotyledons. There were numerous white nodules which appeared to be encapsulated, and these on section showed as fibrous nodules with a central core resembling old blood and serum. The placenta was reported by the pathological department to show numerous areas of necrosis with granules of calcification. The Wassermann reaction was negative.

CASE 10.—Aged 28. Third pregnancy. Admitted with a history of bleeding for three days following a severe fall on the previous day. She was complaining of abdominal pain located in the left loin and iliac regions. Pulse-rate 102. Temperature 101°. Urine clear. Examination of the abdomen suggested a five months' pregnancy. Delivery of a macerated fœtus occurred a day later, a large quantity of old and new blood followed the completion of the second stage, the patient's temperature being then 103°, pulse-rate 136. After a lapse of 40 minutes the placenta showed no signs of separation and unsuccessful attempts at delivery were made by Credé's manœuvre with and without an anæsthetic. The fundus was difficult to locate because of the small size of the uterus. 150 c.cm. of saline were injected in 90 seconds into the vein, and the fundus rose in the abdomen so that it was an easy matter to grasp it, and easily expel the placenta. The placenta was small and fibrous, whitish-pink in colour, and covered with old blood clot.

This case was the third attempt to obtain a placenta retained in utero after an abortion and the only one to be successful.

CASE 11.—Aged 19. First pregnancy. Normal delivery. Ten minutes after delivery the patient began to lose considerably and continuously. After 30 minutes the placenta still being unseparated a "Credé" manipulation was attempted firstly without and then with an anæsthetic. This was not successful, but success followed the injection of 400 c.cm. of saline. The patient lost 1400 c.cm. of blood before the placenta was obtained. Wassermann reaction positive.

CASE 12.—Aged 35. Seventh pregnancy. Admitted as a prolonged labour. Patient very stout with pendulous abdomen. Delivery was normal, but the uterus failed to contract after the birth of the child and the patient lost slowly. "Credé" tried without effect. 450 c.cm. of saline were injected into the umbilical vein and we waited for 10 minutes in the hope that uterine contractions would commence. As these were not forthcoming another 400 c.cm. were injected. This second injection induced strong contractions associated with uncontrolled bearing down, resulting in the delivery of the placenta. Patient had lost 1500 c.cm.

CASE 13.—Aged 32. First pregnancy. General condition poor. The birth of the child was effected by forceps following a prolonged labour. The patient bled freely, the uterus appearing to contract well but not to completely separate the placenta. A "Credé" under anæsthesia proved unsuccessful. 320 c.cm. of saline were injected into the umbilical vein and the placenta easily expressed. The placenta was small and thick. There were numerous cotyledons distinctly separated from each other, the depressions being wide enough to show the maternal surface of the fœtal membranes.

AN INVESTIGATION INTO THE MECHANISM OF DELIVERY.

Of the various causes to which the success of this injection was attributed, I think that the increase of bulk is the first and foremost. When the method was first instituted it was suggested that the temperature of the acidulated water was the main feature. The cold water caused a cessation of the hæmorrhage, and a renewal or increase in power of the uterine contractions effected the birth of the placenta. The theory put forward by Jarcho in his paper was that the injected fluid gradually found its way to the smaller vessels of the villi and bursting through the villi formed a hydroma between the maternal decidua and the placenta. This separated part of the placenta and induced uterine contractions. The hydroma then acted in the same way as the retroplacental hæmatoma and was squeezed from out of the uterus, separating more of the placenta on its way.

It was with the express desire of causing a rupture of the small veins of the placenta that I injected the saline as fast as possible rather than slowly and the results seemed to substantiate this view by the fact that separation and delivery were easily obtained. It was noticed, however, upon using coloured saline, that no saline ran away from the vulva until after the completion of the third stage—a fact that seemed difficult to explain if a retroplacental hydroma formed; even supposing that all the deliveries followed Schulze's mechanism.

One hundred and two normally evacuated placentæ were obtained immediately after birth and examined. They were then subjected to injection; it was found that on an average a placenta would accommodate 350 c.cm. of fluid before leakage occurred, and that when it did occur the fluid escaped rather at the periphery of the placenta than from the centre. This means that if the placenta in utero will hold the same quantity of fluid as the delivered placenta, few of our cases were subjected to a pressure great enough to burst the small veins and no retroplacental hydroma was formed.

DISCUSSION OF RESULTS.

Oldfield [5] mentions that in his experience he has not encountered a case of adhesion of the placenta, and that the great error, especially with beginners, is that they fail to distinguish *between* retention of the placenta in the vagina and in the uterus. I think we may carry his line of thought further and say that very few of those cases in which the placenta remains in the uterus are cases of completely adherent placenta and that usually the retention is caused by some abnormality in the uterine musculature, either the formation of a contraction ring or atony of the muscle.

On looking through the reports of the Leeds Maternity Hospital during the last few years, I find that most of the operations for manual removal were performed by the house surgeon, whose average stay is about six months. In well over half the cases the notes show that "removal was difficult, ie placenta seemed to be firmly adherent," and gain, the report on the removed placenta showed iat it was ragged and questionably complete. his year thirteen consecutive cases treated by mbilical vein injection have all come to a successful sue except the first; and this was one in which ianual removal was being undertaken for a third me, and what is more important, this was the first ise treated by vein injection before we had really lt our way. Without in any way wishing to isparage the reports of any of my predecessors, cannot but think that the great bulk of placenta escribed as being adherent were either only partially dherent or merely retained.

I mention this point with a definite purpose· do not see how injection of the umbilical vein an possibly aid the separation of a placenta accreta, r the truly morbidly adherent placenta; but because his condition is extremely rare, the possibility of its resence should in no way discourage the accoucheur rom proceeding with injection of the umbilical vein. n all our cases the injection seemed to elicit uterine ontractions to a varying degree—in one case owerful enough to cause complete expulsion of he placenta before the injection of the saline was inished. The cause is undoubtedly due to the udden increase in the bulk of the uterine contents nd can be likened to the procedure of passing the and inside the uterus in an attempt to stop post-artum hæmorrhage. This also agrees with our indings, that the quicker the injection of the fluid s made the sooner do the uterine contractions ppear.

Five of the cases described above had abnormal lacentæ. These were white and fibrous, with nultiple white nodules, presumably formed from ld hæmorrhages, with complete absence of cotyledons. The question that naturally arose was, were these placentæ in anyway morbidly adherent, and if so, by what mechanism were they detached?

During the investigation of the injection of the recently delivered placentæ it was noticed that as the injection proceeded, the placenta became firmer and firmer, that the folds became undone and the spaces between the cotyledons filled up so that when the injection was complete the placenta had lost its soft consistency and now resembled a rubber disc, being solid enough to stand upon its edge when held in the hand. We consider that when the placenta is injected in utero the events are similar and that the placenta formerly lying in folds in the uterine cavity straightens out, its solidity increasing, while portions loosely adherent are torn away from the uterine wall. At the same time the onset or increase in strength of uterine contractions expels the placenta into the lower uterine segment or vaginal vault. A similar explanation suffices for those placentæ held by a contraction ring.

In contrast to the views of other writers, the cases mentioned above seem to show the extreme value of the Mojon-Gabaston manipulation in post-partum hæmorrhage. In twelve out of the thirteen described, bleeding was the main indication for obtaining delivery of the placenta. This is the only condition which calls for urgent treatment, and I hope I have shown that an adequate and easy method is available, involving the slightest amount of manipulation, very little in the way of surgical instruments, and no preparation, such as anæsthesia or special surgical technique, on the part of the accoucheur. The results, so far as a series of thirteen cases can show, were nearly all completely successful. Throughout the whole series there was not one case of uterine infection, and in none did the injection seem to cause any suggestion of shock, as estimated by the general condition, the pulse, and the blood pressure of the patient.

The rapidity of the manipulation is obvious, in nearly all the cases from the onset of the injection to the final delivery of the placenta not more than five minutes elapsed, a short space of time compared with that taken in the preparation for and completion of the delivery by manual removal. This is a factor to be considered when dealing with a patient who is continuously oozing blood. Other points which are noticeable are:—

(1) The value of the method in cases of ante-partum hæmorrhage after delivery either accidental or unavoidable, where the patient's general condition is such that a further loss would be detrimental. One need not await the physiological separation of the placenta, but by artificial means complete the third stage at once.*

(2) The placenta may be obtained before attempts are made to suture injuries to the genital tract, and thus overcoming the presence of the cord and the continuous loss of blood which obscure the field of operation.

(3) In cases of premature labour with retained placenta, the injection of the vein causes an increase in size of the uterus, enabling the accoucheur to obtain a firmer grasp of the uterus and effect a Credé manœuvre when this is necessary.

In conclusion, I wish to point out that the method presents to the doctor, whether of a clinic or in general practice, an easy means of obtaining completion of the third stage of labour, without the aid of any further instruments than he normally carries in his bag; without the necessity of much preparation or anæsthetic, with a fair percentage proportion of success, and above all without the great fear of puerperal infection and risk of death which accompanies the manipulation now generally practised—namely, "manual removal."

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SERUM AGGLUTINATIONS TO THE TYPHOID GROUP

IN CASES OF PULMONARY TUBERCULOSIS.

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In the course of a number of typhoid agglutination tests for diagnostic purposes it was observed that anomalous reactions might occur in cases of pulmonary tuberculosis. These anomalous reactions have been noted by other observers, who have criticised the specificity of the agglutination tests on this account. Krencker[1] examined 26 cases of tuberculosis and found that 16 of them gave positive agglutination tests to the typhoid group (61·5 per cent.). Reactions were obtained in varying dilutions up to 1/500, and in a number of cases which were repeated the agglutinins persisted.[2] [3]

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* Mr. Oldfield has called our attention to cases where the placenta is delivered immediately after the birth of the child, associated with only the slightest loss of blood.

The occurrence of a large number of patients suffering from pulmonary tuberculosis in the London County Mental Hospitals made it possible to investigate by modern methods the nature and extent of these anomalous reactions, and in this communication the agglutination reactions to the typhoid group of a series of tuberculous cases have been tested using Dreyer's technique and the Oxford standard agglutinable cultures. All the cases were suffering from undisputed pulmonary tuberculosis, and it was ascertained that no case had been inoculated with T.A.B. vaccine, neither was there any history of typhoid or paratyphoid fever infection.

The number of cases examined was 73, and of these 25, or 34·2 per cent., showed agglutinins to either one, two, or all of the typhoid group of organisms. The total incidence of positive agglutination reactions is shown in Table I., and the simultaneous occurrence of the respective agglutinins is shown in Table II.

TABLE I.

Number showing agglutinins to	*B. typhosus*	20 (27·3 %)
	B. paratyphosus A ..	10 (13·6 %)
	B. paratyphosus B ..	18 (24·6 %)

TABLE II.

Typhoid, Para. A and Para. B	7	Paras. A and B	1
Typhoid and Para. A ..	2	Typhoid only	5
Typhoid and Para. B ..	6	Para. A only	Nil.
		Para. B only	4

The strength of the reactions, recorded in terms of standard agglutinin units per cubic centimetre of serum, was as follows:—

B. typhosus— Showed an average of 17·7 units.	Highest recorded ..	40·0
	Lowest " ..	3·5
B. paratyphosus A— Showed an average of 17·1 units.	Highest " ..	48·0
	Lowest " ..	5·0
B. paratyphosus B— Showed an average of 26·2 units.	Highest " ..	60·0
	Lowest " ..	5·0

In nine cases the examinations were repeated after three months and in each case the reaction persisted with but little variation in titre. The full results on these cases are given in Table III. and exemplify the average titre obtained in these anomalous reactions and the persistence of the reaction.

TABLE III.

Case No.	1st examination.			2nd examination.		
	T.	A.	B.	T.	A.	B.
1	Neg.	Neg.	+30	Neg.	Neg.	+11·9
2	+10	+15	+30	+ 7·9	+13·6	+59·5
3	Neg.	+ 6 5	Neg.	Neg.	+ 6·5	Neg.
4	+40	Neg.	Neg.	+39·6	Neg.	+11·9
5	+15	Neg.	Neg.	+ 7·9	Neg.	Neg.
6	+ 8	+15	+ 6	+ 3·9	+13·6	Neg.
7	+20	Neg.	Neg.	+19·8	Neg.	Neg.
8	+ 8	Neg.	+60	+ 7·9	Neg.	+59·5
9	+30	+15	+10	+39·6	+13·6	+11·9

The greatest alteration in strength of titre was in case No. 2, positive to *paratyphosus* B, which increased from 30 to 59·5 standard agglutinin units per cubic centimetre. In cases Nos. 3, 7, and 8 no appreciable change occurred.

CONTROLS.

It might be suggested that a similar incidence of positive reactions could occur in any series of cases taken from a mental hospital population, especially in view of the work of Gilfillan and Mann,[4] and McCowan and Mann,[5] who showed the existence of definite typhoid carriers amongst mental hospital inhabitants who gave no previous history of typhoid infection.

In order to control the preceding observations on tuberculous cases the agglutination reactions to the typhoid group of organisms of 100 cases of some years' residence in mental hospital, but showing no evidence of tubercle, were investigated. Of the 100 cases examined 95 gave completely negative reactions to *B. typhosus*, *B. paratyphosus* A, and *B. paratyphosus* B, and the remaining five gave slightly positive results; details of these cases are given below (Table IV.).

TABLE IV.

Case No.	Agglutination reactions.			History of case.
	B. typh.	*B. para.* A.	*B. para.* B.	
1	+3	Neg.	Neg.	Had lived in Canada for some years prior to being admitted to Long Grove Mental Hospital. No history of T.A.B. inoculation or infection.
31	+3	Neg.	Neg.	Had lived in America for three years. No history of T.A.B. inoculation or infection.
57	Neg.	Neg.	+6·25	No history obtainable.
58	+6·25	Neg.	+12·5	Had served abroad in the Army.
62	+6·25	Neg.	Neg.	Deaf-mute. No history obtainable of T.A.B. inoculation or infection.

SUMMARY.

Seventy-three cases of pulmonary tuberculosis with a negative history of T.A.B. inoculation or infection have been examined for agglutinins to the typhoid group of organisms and these were found to be present in the blood of 25, or 34·2 per cent.

These 25 cases showed reactions of diagnostic significance, which persisted for three months during the course of the investigation.

Control investigations of 100 cases of non-tuberculous mental hospital patients showed slightly positive reactions in five cases only, one of which was possibly the result of prophylactic inoculation against the typhoid group of fevers during army service.

The results suggest that in a case showing persistent agglutination reactions of average low titre and not showing the rise of titre associated with the progress of true typhoid infections, the possibility of tubercle should not be overlooked.

In conclusion, we would thank Dr. D. Ogilvie for permission to publish these records, and Dr. F. L. Golla, Director of the Laboratory, and Mr. S. A. Mann, D.Sc., for their encouragement and advice in the course of this investigation.

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CLINICAL AND LABORATORY NOTES

TWO CASES OF AUMATIC DISLOCATION OF THE HIP IN CHILDREN.

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THESE two cases of traumatic dislocation of the hip children were seen at one hospital within a year. adults it is an uncommon injury forming only per cent. of all dislocations, while in children the idence is considerably less. C. C. Choyce,[1] up to 24, was able to collect only 59 recorded cases. e reasons for its relative rarity probably are the bility of the joint, the strength of the surrounding aments and muscles, and the depth of the acetulum, while in children the injury that would duce dislocation in an adult is more likely to ing about separation of the epiphysis of the head the femur.

The dislocation is usually due either to a weight ling on the back while the subject is in some sort squatting position, or to a fall and landing with e leg bent under the body. The former is the ual cause of dislocation of the hip in miners, among hom the injury is probably much commoner than the rest of the population. Whatever the cause, e course of events is the same, the Y-shaped iliomoral ligament acting as a fulcrum, the head of e femur is forced through the weak portion of e capsule between the pubo-femoral and ischiomoral ligaments, its ultimate position in relation the acetabulum, either anterior or posterior, pending on whether the limb was abducted or adducted at the time of the injury; if the former, an anterior, and if the latter, a posterior dislocation is produced.

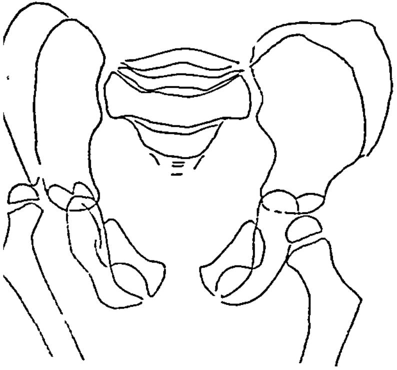


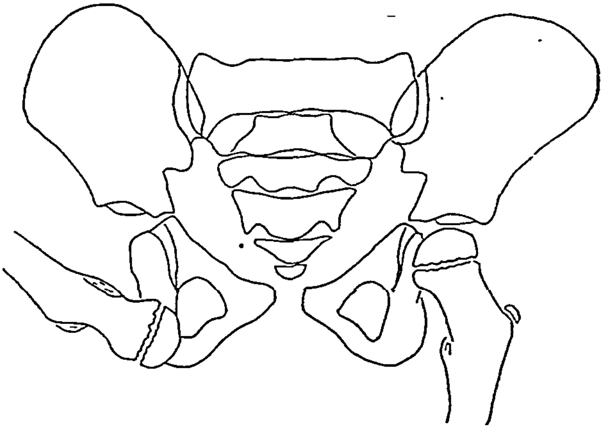
FIG. 1 (Case 1).

CASE 1.—A child, aged 3 years 11 months, was admitted to the Belgrave Hospital with a history of having fallen ut of bed with the right leg "twisted" under him. The ccident had occurred five days previously. The right g was adducted, flexed and internally rotated, and the ead of the femur could be felt in the gluteal region. X rays howed a sciatic type of dislocation, the head of the femur ring in the great sacro-sciatic notch (Fig. 1). A general næsthetic was given and reduction effected by Bigelow's ircumduction method.

This case illustrates the trivial accident which may roduce a dislocation when the muscles are relaxed, he child probably having been asleep when he fell ut of bed.

CASE 2.—A girl, aged 7 years, had been sliding down the anisters and had fallen about 10 feet into the hall below; her legs were said to be doubled beneath her. The child, seen within 15 minutes of the accident, was in extreme pain, the right thigh was almost fully flexed at the hip, abducted more than is normally possible, and externally rotated. The head of the femur could be felt above and anterior to the tuber ischii. A skiagram showed the head of the femur to be resting against the posterior lip of the acetabular notch (Fig. 2). Anæsthesia was induced with open ether and reduction was very easily effected. An adventitious movement slightly extending the thigh, the head slipped back into place before any attempt at reduction had been made.

FIG. 2 (Case 2).



This case is of interest because the head of the femur had been arrested in the first stage of dislocation and had not taken up either an anterior or posterior position. It is noteworthy that the child was supporting her right knee as though fearful that something worse might happen if she let it go. The case bears a striking resemblance to the subglenoid or luxatio erector type of dislocation occurring at the shoulder-joint.

The second case, seen 11 months after the accident, showed no disability as the result of the dislocation, and a skiagram of the hip was normal. The first case unfortunately cannot be traced.

I am indebted to Mr. C. P. G. Wakeley and Mr. R. A. Ramsay for permission to publish these two cases.

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[1] Brit. Jour. Surg., 1924, xii., 52.

RUPTURE OF THE URETHRA.

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OF THE KALENE HILL HOSPITAL, N. RHODESIA.

ON August 21st, 1931, a man, aged 40, presented himself for treatment. He gave a history of old-standing gonorrhœa. Four years ago, following a period of difficulty of micturition, he became entirely unable to pass water. This retention was followed by abscess formation and a severe illness.

On examination the man, who had walked 80 miles for treatment, was emaciated. The penis, scrotum, and pubes were swollen, but while the suprapubic tissues and penis pitted on pressure, the skin of the scrotum and perineal region was as hard as crocodile hide. On micturition, urine discharged itself through about a dozen sinuses above the pubes, in the peno-scrotal angle, and through a perineum which was riddled with sinuses. A few drops passed the meatus, which was contracted to a pinhole. Fortunately the stricture did not prove impassable, and with its dilatation and a plastic enlargement of the meatus, micturition became normal, and all the sinuses closed and healed rapidly.

This case had obviously been one of rupture of the urethra, and the survival of the patient for four years after such a catastrophe without treatment was only less remarkable than his dramatic recovery following the simplest of procedures.

ATYPICAL HODGKIN'S DISEASE.

By Major Amir Chand, M.B. Punjab,
F.R.C.P. Edin., I.M.S.,
PRINCIPAL AND PROFESSOR OF MEDICINE, MEDICAL SCHOOL, AMRITSAR, INDIA.

Atypical Hodgkin's disease with a leukæmic blood picture is rare. Leucocytosis, sometimes fairly high, may be met with in Hodgkin's disease, but I am not aware of any record of it with a total leucocyte count of well over 100,000, and a large number of myelocytes and metamyelocytes.

A man, aged 40, was admitted on Dec. 7th, 1931, complaining of swelling of both sides of the neck, axillæ, and groins (duration eight months), and swelling of the legs, abdomen, and face (duration seven months). He dates his illness from an attack of shivering (? fever) about a year ago. Since then weakness, disinclination for work, lethargy, and lassitude have been steadily increasing. A little work would make him feel breathless and exhausted. About a month later he felt pain round about the left iliac crest. This was followed by pain in the abdomen with flatulent distension. Some three weeks afterwards he noticed small swellings on both sides of the neck, then in the inguinal regions, and a little later in the femoral regions. Within a short time of the latter, œdema appeared on the feet, at first on the left and then the right, and it has steadily extended up the legs, scrotum, trunk, and face. About a month after the appearance of œdema, swellings appeared more or less simultaneously in both the axillæ.

He has now marked œdema almost all over the body, only the hands, the upper part of the chest, and the scalp being free from it. He looks very anæmic. Spleen is two fingers below the costal margin, its edge sharp, surface smooth; it is fairly hard in consistence, and is not tender or painful. The liver is one finger-breadth below the costal margin; its margin is sharp, and surface smooth and fairly hard, free from pain or tenderness. Almost all the superficial glands are enlarged, they vary in size from a pea to a hen's egg; a few are soft, others are hard, most of them are free, but some are adherent to each other, producing large masses, some about the size of an orange; none is adherent to the deeper structures or to the skin; the enlargement is almost symmetrical, altogether painless, and free from tenderness on pressure. There are signs of enlargement of the deeper glands, and from the history it appears as if they were the first to be affected

During the period of a little over two months that he has been under observation there has been a slight rise of temperature (maximum 100° F.) on five occasions, but unaccompanied by any feeling of feverishness. Previous to that there may have been similar rises, but the temperature was never taken as he did not feel feverish.

Blood count has been done repeatedly and independently by different workers (hence the different terminology used), but it will do to quote a few of the results.

Dec. 9th: total red cells, 2,630,000 per c.mm.; hæmoglobin, 56 per cent. (Sahli); total white cells, 128,000 per c.mm.; polymorphs, 53 per cent.; myelocytes, 22 per cent.; metamyelocytes, 22 per cent.; lymphocytes, 3 per cent.

Dec. 21st: total red cells, 2,700,000 per c.mm.; polymorphs, 54·5 per cent.; myelocytes, 38·2 per cent.; lymphocytes, 5 per cent.; large mononuclears, 2 per cent.

Jan. 1st, 1932: total leucocytes, 22,500 per c.mm.; polymorphs, 53·3 per cent.; myelocytes, 43·3 per cent.; lymphocytes, 3·4 per cent.

Feb. 17th: total red cells, 2,590,000 per c.mm.; hæmoglobin, 60 per cent. (Sahli); total white cells, 28,200 per c.mm.; polymorphs, 70 per cent.; metamyelocytes, 4 per cent.; myelocytes, 7 per cent.; lymphocytes, 18 per cent.; eosinophiles, 1 per cent.

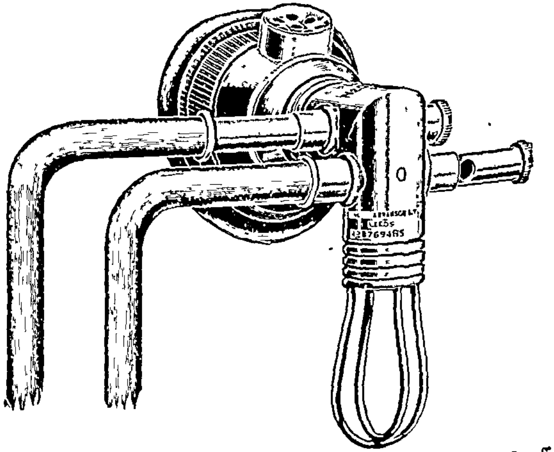
Thus the blood picture, which first resembled that of myeloid leukæmia, showed a marked change after a few weeks, in that the total leucocyte count came down by about a hundred thousand, and the number of polymorphs went up at the cost of myelocytes and metamyelocytes.

A gland was removed from an axilla and examined independently by two pathologists. Their reports are: (1) "Section of the gland shows proliferation of endothelial cells. No eosinophiles were seen. I think it is an atypical case of Hodgkin's disease, with a leukæmic blood picture and endothelioma-like glandular changes." (2) "Sections show sheets and masses of large round cells with faintly staining but clear protoplasm, and moderately chromatic vesicular nuclei. These cells definitely exhibit vasoformative character, and are therefore endothelial in origin. When examined with 1/12th oil-immersion lens some cells show multilobed nuclei. On the whole, stroma is scanty, but in some places there is definite evidence of fibrous tissue development, particularly around the large blood-vessels. At the margins of the sections in some places one finds remains of the lymph gland structure. Atypical Hodgkin's disease."

NEW INVENTIONS

A SIMPLIFIED ANÆSTHETIC APPARATUS.

The apparatus here illustrated introduces a method of administering gas and oxygen in midwifery suitable for the general practitioner. A gas and an oxygen cylinder is fitted with Pinson valves, and connected each by a separate rubber tube with a Clover's ether apparatus, the bag mount of which is fitted with two slot valves, one for each rubber tube. The slot valves which are fitted to the angle piece holding the bag enable either gas, oxygen, or both, to be given in any quantity, and ether can be turned on and off at will. This simple and portable apparatus enables gas and oxygen to be given alone, with the face piece if desired. If deeper anæsthesia is required for operative work or the application of instruments, the ether chamber may be added. There has been an absence of shock and hæmorrhage in all cases where the apparatus has been employed, while the use of such small quantities of ether makes for safety in bedrooms with open fires and gas jets.



The slot valve is made by Messrs. Reynolds and Branson, Ltd., Leeds.

G. R. Potter, M.R.C.S.

MEDICAL SOCIETIES

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THE annual congress of this society took place at he University, Edinburgh, from May 12th to 14th, he new President, Dr. A. H. H. SINCLAIR, occupying he chair. In his opening address he made a further ontribution on the intracapsular extraction of ataract, with a motion picture showing the operation s he carried it out. In the Bowman Lecture Prof. Dr. J. VAN DER HOEVE dealt with Ocular Movements.

A paper was contributed jointly by Mr. SPENCE MEIGHAN and Mr. NORMAN M. DOTT on

Intracranial Resection of the Optic Nerve in Glioma Retinæ.

They recalled the work of A. B. Reese, of New York, who had shown that of eyes removed on account of glioma retinæ, 52 per cent. showed invasion of the optic nerve and that in 81 per cent. of these invaded nerves severance of the nerve at enucleation was distal to the disease extension. Hence 43 per cent. of all cases of enucleation for glioma were doomed to failure before the patient left the operating room. Yet this tumour showed little tendency to invade other than its parent nervous tissues. Death was due to backward extension to the optic chiasm and brain, not to local spread, or to glandular or blood stream metastasis. These were the facts which had led Mr. Meighan and Mr. Dott to do a more radical operation than the usual one in a patient—a girl of 2½. The child was brought because of the peculiar appearance of the left pupil and associated discomfort; a whitish appearance of the pupil had been noted six months previously. There was some congestion in the eyeball, the pupil was semi-dilated, and the anterior chamber was shallow. The intra-ocular tension was 40 mm., but there was neither proptosis nor glandular enlargement. The other eye was healthy. Glioma retinæ was diagnosed, and enucleation advised. At the operation there was difficulty in dislocating the globe; the optic nerve was severed with the globe still in the orbit. Eventually canthotomy had to be done to extract the detached eye. The sclera was intact. Histological examination revealed a characteristic retinoblastoma. The tumour had found its way along the neural tissue of the optic nerve through the lamina cribrosa, and along the interseptal pathways of the nerve. Seven days after the enucleation the orbit was reopened and an attempt made to secure a further portion of the remaining nerve at the apex of the orbit, but Mr. Dott could not satisfy himself that the nerve had been re-exposed. Fourteen days after enucleation a radium bomb was directed on to the orbit for two 48-hour periods. Then, as there was no apparent involvement of the optic nerve or chiasm opposite, he entered upon an intracranial resection of the optic nerve, and removed the entire length of that nerve to the optic chiasm. The operation was detailed, with the aid of drawings and slides. Some sepsis occurred, but subsided, and since the procedure the child's health had been excellent.

The whole of one morning was devoted to the discussion of the pre-operative and post-operative management and the complications of

Senile Cataract.

Dr. A. J. BALLANTYNE, in opening, dwelt chiefly on the complications likely to arise and how to guard against them, and on the preparation of the patient. The removal of a cataractous lens through the wall of the eyeball might sound a simple procedure, but it was surrounded with possibilities of disaster. All the standard operations could produce excellent results, but antisepsis and asepsis had not proved of the same value in ophthalmology as in general surgery, though wound infection now occurred less frequently than 30 years ago. Infection might not be obvious until as long as 72 hours after the operation. Apparently ocular inflammations were not always association with trauma; exogenous infection played a large part even in low-grade inflammations. With regard to prophylactic asepsis, many operators found that their dexterity was hampered by rubber gloves, but that both surgeon and assistants should wear masks covering mouth and nose during operation. The danger arising from chronic dacryocystitis could be avoided by excising the sac, ligaturing the canaliculi, or cauterising the puncta before considering the intra-ocular operation. It was his practice to have a culture made from the conjunctiva two days before operation, and to have the eye cleansed twice a day by irrigation with normal saline, followed by acriflavine drops (1 in 1000), with a final application of lotion and drops just before operation. If cocci were abundant in the area on the day appointed operation was postponed, and drops of 1 per cent. mercurochrome were added to the former routine.

Pre-operative measures included treatment of glycosuria, removal of septic teeth and other obvious foci of sepsis, and a purgative. Latent syphilis and tubercle could cause uveal inflammation after cataract extraction, and diabetics were more liable to hæmorrhage and to iritis than were normal persons. Should hyperglycæmia appear after operation, insulin should at once be given. Albuminuria in itself was not a bar to the operation, but it might indicate cardiovascular or renal disease. Glaucoma might follow this, as any other, type of operation, and the interval before it supervened might be as long as 20 years. Iridectomy and sclero-corneal trephining seemed to give the best results in the presence of glaucoma.

Sir ARNOLD LAWSON pointed out that the conjunctiva was, in the ordinary course, clean, and therefore he regarded most of the antiseptic washings and other precautions against contamination as needless, and indeed irritating. No cataract operation should be undertaken if in the particular case there was likelihood of pathogenic infection. All he considered necessary was to exclude the presence of conjunctival discharge, which was a sign that dangerous organisms were present. It was important that the patient should be in his best health at the time of operation, especially as most of the subjects of cataract were well advanced in years.

Mr. R. FOSTER MOORE gave as his deliberate opinion that no intracapsular extraction of cataract operation would stand the test of time, because of the outstanding danger of loss of vitreous. Moreover, the behaviour of the patient, which was beyond the surgeon's control, exerted a great influence on the result of such operations. Some regarded a loss of vitreous as of comparatively little moment, but he ranked it as the worst accident which could happen during the operation.

Blindness and its Certification.

Papers on this subject were read by Mr. JOHN MARSHALL (assisted by Mr. C. M. SMITH) and Dr. C. W. GRAHAM. Mr. Marshall said that during the past year the methods of examining and of certifying blind persons had been the subject of reports from the Department of Health for Scotland, the Council of British Ophthalmologists, and the Prevention of Blindness Committee of the Union of Counties Associations for the Blind. There were minor differences in the recommendations in these reports, and it was felt that the society could help to secure the adoption of a system which should operate uniformly over the whole kingdom. As regards definition, the committee of the Royal Society of Medicine had stated: "Experience shows that persons whose acuity is below one-twentieth *of the normal—i.e., 3/60 Snellen—are* usually unable to perform work requiring eyesight, while persons with vision better than one-tenth are usually able to perform some such work. Persons with intermediate degrees may or may not be able; much depends on the intelligence or bodily strength, and much on the nature of the blindness."

Mr. LESLIE PATON remarked that the definition of blindness which had been adopted at Geneva was one in which he felt a parental interest—namely, a blind person was one so blind as to be unable to perform work for which sight was usually essential.

Mr. J. H. FISHER expressed the admiration he felt, which was shared by his English colleagues, of the great lead which Scotland had given in this matter of *certification of the blind.* He agreed with those in Scotland that the right system was the clinic system. In scattered parts of the country where certain of the patients could not come under the observation of the clinic it was his strong view that the coöperation of two surgeons was the solution. There was difficulty, in regard to a specific standard, in determining whether a person should be put into the category of the blind or into that of the non-blind. He thought some latitude should be given to the certifying surgeon, or preferably surgeons. There were patients whose direct sight, especially distant vision, might be very low, who were able to read ordinary school-books. One could not deny that in some cases incapacity was exaggerated by the patient when it was a question of obtaining money. It was hoped to be able to establish a reliable census of blind persons, and a determination of the causes of blindness; this information, when obtained, would provide the best pointer to the best methods of prevention.

Mr. J. TUDOR THOMAS read a communication, illustrated by slides, on

Transplantation of Scleral Tissue on to Rabbit's Cornea.

He had carried out this transplantation on five rabbits, and in all of them the graft was well united. He found it more difficult to be precise with this operation than with transplantation of cornea. If the graft was to remain avascular, it was essential that union should be secured of all its parts. He had established the facts that (1) scleral tissue could be successfully transplanted to replace the whole thickness of the cornea; (2) the opacity in successful scleral grafts became less; (3) it was possible to graft scleral tissue on to the cornea without any vascularisation taking place, under the same conditions as those which resulted in transparent grafts of corneal tissue.

During the congress many clinical cases were inspected and discussed. A museum of ophthalmological exhibits had been organised by Miss Ida Mann.

MANCHESTER MEDICAL SOCIETY.

AT a meeting of this society on April 6th Dr. R. RALSTON PATERSON read a paper on the

Radio-sensitivity of Tumours.

Tissues, he said, vary markedly in their response to radiation. The property of tissue which underlies this variable response is called *radio-sensitivity,* or at the other end of the scale radio-resistance. In particular, tumours show a wide range of such sensitivity. By contrasting the sensitivity of growths with the sensitivity of the skin—in both cases using the minimum. lethal dose as the standard—it is possible to group tumours into four groups.

(1) *Radio-sensitive Group.*—This is pathologicall a heterogeneous group of growths, but clinicall the group includes many highly malignant growth which metastasise early. The lethal dose for thi group of tumours is less than the lethal dose fo the skin, and thus sufficient radiation to produc lethal changes can be given by external method alone. External methods of irradiation. X ray in larger tumours, external radium in mor localised tumours, thus become the treatment choice.

(2) *Epitheliomata.*—In this group are included als the epithelial tumours of breast, excepting tru adenocarcinoma, because whatever their natu *they act from the point of view of their reaction* radiation as do the squamous epitheliomata. Th group includes a high proportion of the malignan tumours and is therefore correspondingly importan To produce lethal changes in those growths, a quanti of irradiation must be used which is approximate in the region of the lethal dose for skin. Th therefore do not lend themselves to satisfacto curative treatment by external methods of irradiati alone. In practice they have to be treated, treated by irradiation at all, by "localised" irra ation, which can only be achieved by means radium. The treatment of choice must therefore between such localised irradiation methods a surgery. This choice is made by a contrast of t ease or difficulty of technical procedures involve of functional results, or of probable survival by one other method.

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alled by Ewing "growth restraint." Here, repeated nall doses of irradiation are used to produce an ffect on the endothelial lining of the vascular system f the tumours. A process resembling endarteritis bliterans ensues, with resulting cessation of, or arked slowing of growth.

These four groups thus cover the whole field of umours, and give us an indication as to the choice of reatment once we know in which group any particular umour belongs. In this chapter of radio-sensitivity here are two likely fields for research work in the uture. In the pathological field there is the problem f ascertaining the exact criteria underlying the elationship between pathological types and radio-ensitivity. In the experimental field attempts are eing made to increase radio-sensitivity, either by lterations in the time-factor of treatment, or by ntravenous methods. Could such increased radio-ensitivity be produced, tumours would then be rendered more amenable to irradiation methods.

Prof. S. L. BAKER read a paper on the

Virus Theory of Cancer.

Although many and various predisposing "causes" of cancer are known, he said, the fundamental cause of the abnormal cell proliferation, which is the central fact of cancer, can be narrowed down to two possibilities:—

(1) The *biological* or *mutation theory*, which postulates an alteration or mutation of the cell initiated by some chemical or physical stimulus. This change once initiated is handed on to subsequent generations of cells by the ordinary laws of cell inheritance—the persistence of an acquired character.

(2) The *virus theory* postulates a continuously acting cause; an infection of the cell by an agent which multiplies and is thus carried on through successive generations of cells.

In the case of mammalian tumours there is a great weight of both histological and experimental evidence in support of the cell as the "cancer unit." Cancer in mammals can be transmitted experimentally only by grafting living tumour cells to new hosts of the same species. No cancer-causing agent has ever been separated from the cells of mammalian tumours. There was no experimental evidence that suggested that a living virus could be responsible for the production of a tumour until, in 1911, Peyton Rous published his first account of a fowl sarcoma transmissible experimentally from bird to bird by a filtrable agent separable from the tumour cells. It is now known that many different types of sarcoma in the fowl can be transmitted in this manner. The fowl sarcomata, apart from this peculiar property of filtrability, differ in no way from mammalian sarcomata. The tumours occur sporadically and there is no evidence of infectivity under natural conditions. The tumour is essentially a local lesion and there is considerable evidence to show that metastases are produced by detached cell fragments, as with mammalian tumours, and not by the dissemination of the infective agent about the body. A strain of fowl sarcoma is not always filtrable and often passes through stages where it can only be transmitted by cell suspensions. Carcinomas occur in fowls but a transplantable strain has never been established, and their filtrability has therefore not been studied.

The exact bearing of these fowl tumours upon mammalian cancer remains at the present time a matter of conjecture, but the facts so far obtained are so peculiar and striking that a continued investigation of them is clearly indicated.

REVIEWS AND NOTICES OF BOOKS

Antigens in the Light of Recent Investigations.

By OLUF THOMSEN, Professor of General Pathology at the University of Copenhagen. Translated from the Danish by HANS ANDERSON, M.D. Copenhagen: Levin and Munksgaard. 1931. Pp. 187.

THIS valuable monograph is a review of the modern position of the antigenic structure of proteins and bacteria. The former are considered with especial reference to their antigenic constitution, the chemical modification of antigenic specificity, and the question of haptenes. Haptenes, as is to be expected, are largely dealt with from the point of view of group and type characters, and the influence of soluble carbohydrate haptenes in determining types. This naturally involves an especially detailed consideration of the pneumococci, although Lancefield's work upon the hæmolytic streptococci and Julianelle's investigation of the Friedländer group are given adequate treatment. The complex question of the constitution of toxins, the basis of the Wassermann test, and allergy are also discussed. It is hardly to be wondered at that Prof. Thomsen is less successful in dealing with these problems than with the more straightforward ones of antigenic structure. The book contains full references and the author has shown good judgment in the selection of his data from the large mass of material at his disposal. The English translation is excellent.

Wheeler and Jack's Handbook of Medicine.

Ninth edition. Revised by JOHN HENDERSON, M.D., F.R.F.P.S. Glasg., Physician, Glasgow Royal Infirmary; Professor of Medicine, St. Mungo's College, Glasgow. Edinburgh: E. and S. Livingstone. 1932. Pp. 654. 12*s.* 6*d.*

"Wheeler and Jack" is as valuable now to the student and practitioner as it has ever been in its 40 years of existence. Like all standard text-books, it has an impersonal quality; it is greater than any of its authors. Dr. Alexander Wheeler laid its foundations in the first seven years, and Dr. W. R. Jack built up from his tradition a work which, while appearing the same, has evolved with the momentous development of medicine in our times. Dr. Jack died in 1927, but his successor, Prof. John Henderson, proves himself in the ninth edition to be a worthy successor. He has thoroughly revised the book and made many modifications and additions, recasting the work on vitamins, gastric disorders, pernicious anæmia, arthritis deformans, and encephalitis lethargica. He has added sections on coronary thrombosis, bundle-branch block, syphilis of the stomach, hepatic efficiency, and cholecystography, acute febrile polyneuritis and narcolepsy, and various types of neurosis. Possibly the neurological and psychological sections of the book will increase in importance as the significance of these subjects is increasingly realised by examiners. It seems anomalous that a text-book should still contain many pages

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(2) *Epitheliomata.*—In this group are included also the epithelial tumours of breast, excepting true adenocarcinoma, because whatever their nature they act from the point of view of their reaction to radiation as do the squamous epitheliomata. This group includes a high proportion of the malignant tumours and is therefore correspondingly important. To produce lethal changes in these growths, a quantity of irradiation must be used which is approximately in the region of the lethal dose for skin. They therefore do not lend themselves to satisfactory curative treatment by external methods of irradiation alone. In practice they have to be treated, if treated by irradiation at all, by "localised" irradiation, which can only be achieved by means of radium. The treatment of choice must therefore lie between such localised irradiation methods and surgery. This choice is made by a contrast of the ease or difficulty of technical procedures involved, of functional results, or of probable survival by one or other method.

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ebrantia, containing alcohol, chloroform, ether, nd the rest; the fourth, hypnotica, with chloral, ronal, sulphonal; and the last, excitantia, or mental imulants, which include tea, coffee, cocoa, tobacco, nd betel. All these are discussed in a manner which ill appeal to the general reader. The author's pinions on certain questions, such as the action of lcohol or the habit-forming properties of codeine, ay not commend themselves to orthodox pharmaco- ogists; prohibitionists may resent his gloomy rognosis of their efforts to save mankind from them- elves. But none can fail to be interested in this ucid and forceful account of narcomania, and in the uthor's views of the fundamental basis of drug ddiction.

Fraud in Medico-legal Practice.

By Sir JOHN COLLIE, C.M.G., M.D., Lt.-Col., R.A.M.C. London: Edward Arnold and Co. 1932. Pp. 276. 10*s.* 6*d.*

IN his new book on fraud in medico-legal practice Sir John Collie gathers together a mass of information and experience on the testing and detection of unsubstantial claims. Not only does he explain in detail how to deal with the wilful simulation of all kinds of symptoms and the deliberate exaggeration of an existing illness or injury; he also considers those borderline cases where hysteria is on the edge of fraud or where patients cannot summon up the will to go back to work. Converse examples of courage and resolution are common enough but doctors may not find it hard to recognise his picture of the patient who becomes obsessed with his illness, who merely marks time until legal proceedings are finished and damages or compensation are finally awarded, and who, after repeated medical examinations and the prolonged receipt of sick allowances, begins to feel a sense of having been wronged. When actual physical injury has subsided, subjective symptoms appear. Traumatic neurasthenia may be far more serious than the initial accident and its immediate consequences. Cases which were at first not fraudulent may end in fraud through want of pluck, "their idleness, their introspection, the attitude of their medical attendants, all combine to demoralise them." Whole-hearted fraud employs endless cunning. The successful counter-methods and ruses recounted by Sir John Collie show how ingenuity can meet its match.

Naturally the effect of the book suggests a sceptical outlook upon claims for damages or compensation. As the preface observes, deserving cases may receive less than their due share of consideration if unworthy persons make improper calls upon help and sympathy. Insurance against industrial accidents and sickness costs far more than the original actuarial estimates. The last report on the Workmen's Compensation Acts contained an official estimate that their total cost to all the industries and employments of the country is over twelve million pounds a year. Here, therefore, as in other social services, any lowering of the standard of care in examining claims or certifying disabilities means an immense wastage of money and indirectly a vastly increased burden upon the community. The medical witness will be asked to give his opinion, either in the law courts or in the preliminary stages of considering a claim. The book contains an admirable chapter on the law of libel, which explains the extent of privilege as well as giving some useful hints on preparation for the witness-box.

Life of Mendel.

By HUGO ILTIS. Translated by EDEN and CEDAR PAUL. London: George Allen and Unwin, Ltd. 1932. Pp. 336. 12*s.* 6*d.*

THIS book is written by the right author, for Dr. Iltis is the present Principal of the Deutsche Volkshochschule in Brünn, was secretary to the International Mendel Memorial Committee some 20 years ago, and is himself known as a specialist in botany through his great volume on the world's flora. But in spite of this aptitude for the subject, Dr. Iltis confesses that he has found considerable difficulty in obtaining material for the biography; Mendel kept no diary; and as a priest he had neither correspondence with women—and letters to women often form the most revealing part of a career—nor freedom in the utterance of philosophical views. By personal taste, however, he was a reserved man—so reserved that at his death it occurred to no one in his own monastery that he was a man of great mark. They knew him as an energetic prelate, who faced lay authority in defence of their rights, and as a hard-working public servant in several departments of agriculture and political economy; but his science they regarded as his amusement (which it was) and as no more. The few documents which he left behind him were burnt. Thus it came about that his short monograph on heredity was forgotten for decades, to be rediscovered in 1900, and give its remarkable impetus to the doctrines of the subject.

This short life is well written. In the first chapters we get detailed indications of the kind of man Mendel really was, and of the manner in which he acquired knowledge and reacted to his environments. We see that his temperament was practical and averse from premature or unsupported speculation, and that his range of experiment was much larger than is usually supposed. Much of his biological work was never mentioned by himself, as he knew that it would give offence to clerical zealots that he should be so employed. His botanical experiments were begun before the publication of Darwin's Origin of Species, though when that work appeared he read it. The reverse is often stated, but as a matter of fact there is a copy of the book in the library at Brünn containing manuscript notes by Mendel, and even a record that he considered that his work was helping to fill up gaps in Darwin's arguments. What is generally understood by Mendelism will be found in Chapters 10, 11, and 12, which form a summary both of what Mendel did and why he was doing it. After eight years of work the results were put into a paper entitled Experiments in Plant Hybridisation, which he read at the Brünn Scientific Society in 1865 to a completely puzzled audience. The proceedings of the Society were sent, in the course of an exchange of courtesy between learned bodies, not only to Vienna and Berlin, but to London, Warsaw, and St. Petersburg, but they attracted no attention whatever. Indeed, the scientific world did not become aware of Mendel until 35 years later. Dr. Iltis discovered the original MS. of this classic paper in a box destined for the flames.

So much has been written on Mendel's doctrines that the story of the researches will be familiar to many, but it is made more piquant by the revelation of Mendel's personality. He is usually thought of as a good old priest making pottering inquiries into the habits of bees and peas in a convent *potager;* he was a fighting mitred abbot, and a finished man of business.

devoted to tropical diseases rarely encountered in this country, while anxiety neurosis, which the practitioner will encounter every day, and probably more than once a day, should occupy a section of less than two inches. The reason is, no doubt, that the proportions of the matter in a text-book much used by students for purposes of revision are inevitably determined rather by the requirements of the examination paper than by the exigencies of practical life. In the more conventional departments of medicine, however, the student can safely turn to "Wheeler and Jack" as a reliable and lucid guide both for his examinations and in his practice.

Selected Writings of John Hughlings Jackson.

Vol. II. Edited by JAMES TAYLOR, M.D., F.R.C.P. London: Hodder and Stoughton. 1932. Pp. 510. 25*s.*

Hughlings Jackson's contributions to medicine ranged far beyond the field of technical neurology; how much farther can be gauged by turning over the pages of this second volume of "Selections." He was a master of both the abstract and the concrete, the subjective and the objective. Minute attention is paid to the stages and signs of optic neuritis, to the action of the intercostal muscles during surgical anæsthesia, and to the movement of the vocal cord when the recurrent laryngeal is stimulated; and from such studies in miniature, as though the observing eye were gazing down a clinical microscope, he moves away to another world, discussing with no less ardour of mind the factors of insanities, the application of evolutionary principles to the build and functions of the nervous system, the use of words and other symbols in mentation. Not content with such colossus strides over the realm of neurological and psychological science, he turns aside lightly to deal in whimsical yet penetrating fashion with punning and joking, in a memorable address. None is more revealing in respect of Jackson's personality; none more typical of his fine mental qualities. He tells us that sense of humour implies surplus intellect, and after illustrating the true implication of punning, as constituting a mild mental diplopia, he hints that his address on jokes is itself merely a big poor joke, yet something more also, for it has an intimate bearing on the study of mental symptoms in "serious diseases." No remark of his embodies a more suggestive truth.

A glance at the long bibliography published in this volume will show how much of Jackson's writings remain in their old format, how little, comparatively, has been chosen for reproduction. The possessor of these new publications can now read at will and ease the choice products of his genius; they form a Jacksonian thesaurus to be pondered over in the leisure hour; and their pages echo the voice and mirror the mind of the best-loved and most gifted among the neurologists of his time.

Ergot and Ergotism.

A Monograph. By GEORGE BARGER, F.R.S., Professor of Chemistry in Relation to Medicine in the University of Edinburgh. London: Gurney and Jackson. 1931. Pp. 279. 15*s.*

ERGOT has long been a subject of interest to physician, chemist, and pharmacologist. Since the middle ages, recurrent epidemics of ergot poisoning have been recorded in various parts of Europe. It has been employed in obstetrics since the seventeenth century, and for nearly 100 years chemists and pharmacologists have laboured to elucidate the mysteries of its active constituents. Everyone will welcome, therefore, a monograph by the discoverer of ergotoxine, who, in what he describes as "a happy partnership in research more than 20 years ago," made important contributions to our knowledge of the subject. Prof. Barger's book is wholly admirable. Little of importance published in Europe or the United States has been overlooked by him, and he has given us what we believe to be the most complete and best account of ergot and ergotism in the English language. The work is divided into six chapters, the first of which discusses the history and distribution of rye in various countries, its importance as an article of diet, its infection with *Claviceps purpurea*, the numerous designations of ergot, its obstetrical use in the eighteenth century, and its introduction into official medicine. The second deals with the two types of ergotism: the gangrenous and the convulsive. The former is easy to understand, for ergotoxine and ergotamine produce a prolonged constriction of the peripheral vessels. But until recently the convulsive variety was inexplicable, for none of the active constituents which had been isolated was found to be capable of producing the symptoms. Then Prof. E. Mellanby's work suggested the convulsive seizures were due to some unidentified neurotoxin, present not only in ergot but in rye itself, which acts only when there is a deficiency of vitamin A in the diet. Prof. Barger, commenting on the recorded epidemics of convulsive ergotism, points out that they afford considerable support for this view. The remaining chapters deal fully with the botanical, chemical, pharmacological and clinical, pharmaceutical and forensic aspects of ergot; and the whole is rounded off with an extensive bibliography and index of authors. The Dohme lectureship, instituted at the Johns Hopkins University to promote the development of a more intimate relationship between chemistry, pharmacy, and medicine, and held by Prof. Barger in 1928, has, indeed, fulfilled the object of the founder by leading to the publication of this important work.

Phantastica.

Narcotic and Stimulating Drugs: their Use and Abuse. By LOUIS LEWIN. Translated from the second German edition, by P. H. A. WIRTH, Ph.C., B.Sc. (Munich). London: Kegan Paul, Trench, Trübner and Co., Ltd. 1931. Pp. 335. 15*s.*

THERE is perhaps no subject which presents more difficulties to the pharmacologist than the action of drugs on the higher centres of the brain. Animal experiments, as a rule, give little or no information; and human consciousness is mysterious and almost incomprehensible. Yet chemical substances affecting consciousness are used by civilised and uncivilised peoples in all parts of the world. The history of the use and abuse of these stimulating and narcotic drugs, and the nature of their effects, are subjects of interest therefore, not only to the pharmacologist, but to physician, psychologist, and intelligent layman alike. All these will find the information they need in the book by Mr. Louis Lewin. Drugs capable of effecting a modification of cerebral function are classified by the author into five groups. The first he calls euphorica, or mental sedatives, of which the best known are opium and its alkaloids, and cocaine. The second is phantastica, or drugs of illusion and hallucination. This includes mescal buttons (*Anhalonium lewinii*) and Indian hemp. The third is the

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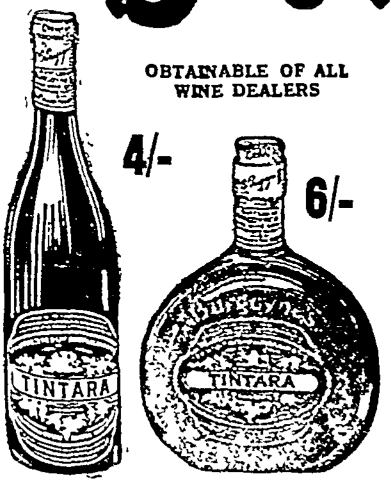

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Fifth edition. By Dr. med. OTTO NAEGELI, Professor der inneren Medizin an der Universität Zürich und Direktor der medizinischen Universitätsklinik. Berlin: Julius Springer. 1931. Pp. 704. RM.89.60.

IN the eight years which have elapsed since publication of the previous edition of this well-known text-book, much new work on hæmatology, which calls for comment, has appeared. With his customary vigour and individuality the author discusses most of the recent advances in this branch of knowledge and has once more brought up to date the most exhaustive text-book that we know of on blood diseases and their diagnosis. Chemical, microscopic, and physical methods of examination; descriptions of cell elements, their morphology, embryology, physiology, and pathological alterations; and finally, descriptions and discussions of the diseases in which blood changes occur are all included. It is noteworthy that two pages of hæmatological nomenclature precede the text in this edition. A term is given, followed by the name of its author, the sense in which it is used, and the number of the page on which it is described. This innovation will be welcome to many who have not followed the controversies on this subject of the last thirty odd years. Among those who are better informed some will be found to protest, for example, against the following premature pronouncement: "Hämocytoblast (Ferrata). Theoretische Stammzelle der roten und weissen Blutzellen, morphologisch identisch mit Myeloblast. Neuerdings als Begriff aufgegeben. S. 276." Indeed from the first page of the preface, which includes a solemn warning against the teaching of Maximow, the author's bias is proclaimed, and throughout the volume no opportunity is lost of returning to this battle ground of the origin of blood-cells. Prof. Naegeli holds to his original views upon the dual origin of the leucocytes and in the sections on embryology and extramedullary myelopoiesis he answers the arguments which his opponents have brought forward in the last eight years. The great interest and value of this text-book are in no small measure due to the author's continual references back to genetical relationships of the cells under discussion, whether one agrees with his conclusions or not.

Among new clinical methods the blood sedimentation test is critically examined and its value is not considered to be very great. On the other hand, a method of estimating globulin worked out in the author's clinic is regarded as important in establishing the existence of infection and cachexia. Special stress is laid upon the distinction between megaloblasts and normoblasts, and upon the identification of pathological neutrophiles. Some of the most valuable additions in the present volume are the author's new classification of the anæmias, a much enlarged chapter on pernicious anæmia, and full accounts of the various forms of septic angina, including sections on agranulocytic anæmia. The illustrations in colour are lavish and excellent and a bibliography accompanies each section.

Journal of Pathology and Bacteriology.

THE May number (Vol. XXXV., No. 3, pp. 301–476) contains the following papers.—A Further Account of the Trinidad Outbreak of Acute Rabic Myelitis: histology of the experimental disease, by E. W. Hurst and J. L. Pawan (London and Trinidad). In Trinidad rabies causes a disease in cattle mistaken for botulism, and one in man mistaken for poliomyelitis; dogs are not concerned, and the infection is probably passed from cattle to man by the vampire bat. Full details are here given of the experimental inoculation of monkeys, and of the histology of the disease so produced. The histological details of human rabies are not as well known as they ought to be.—The Classification of Cancer of the Rectum, by C. E. Dukes (London). Cases may be divided into those confined to the wall of the rectum, those which have spread to extra-rectal tissues, and those which have in addition involved the regional lymphatic glands. The prognosis of the three groups is as would be expected.—The Pathology of Aneurysm: a review of 167 autopsies, by H. G. Garland (Leeds). This analysis of the aneurysms found in 12,000 consecutive examinations at Leeds brings out the great numerical preponderance of aortic lesions and the unimportance of syphilis in the smaller vessels. Many interesting details are given, and there is an ample list of literature.—A Malignant Melanotic Tumour of Ganglion Cells arising from a thoracic sympathetic ganglion, by W. G. Millar (Edinburgh). In a man of 34.—Medullo-epitheliomas of the Brain and Retina, by T. B. Davie (Liverpool). One of the brain (rare) and two of the retina.—The Isolation of Motile Organisms from apparently non-motile cultures of *B. typhosus*, *B. proteus*, *B. pestis*, *B. melitensis*, &c., by D. B. Colquhoun and J. Kirkpatrick (Glasgow). When grown on semi-solid media several organisms which are not motile on the ordinary solid or liquid media develop flagella and motility, or, having flagella already, become motile. It seems likely that the conditions of growth enable motile individuals to emerge from their non-motile populations and become manifest.—The Occurrence of True Bone within a Renal Calculus, by G. Stuart and K. S. Krikorian (Jerusalem). Some infective process causes an inflammatory condition in the submucous connective tissue which leads to bone formation. The bone then sloughs out into the lumen of the pelvis and forms the nucleus of a calculus.—The Effect of Carbon Monoxide and other agents upon the rate of Tumour Growth, by J. A. Campbell (London). Laborious experiments on mice show that chronic carbon monoxide poisoning stunts general growth and delays the growth of transplanted tumours.—The Interstitial Reactions caused by Various Dusts and their influence on Tuberculous Infections, by E. H. Kettle (London). Siliceous dusts which are effective in causing dangerous silicosis in man may be identified by their producing lesions in animals in which tubercle bacilli grow freely.—The Transmission of Fowl Tumours to Pheasants, by C. H. Andrewes (London). Three fowl tumours grew well in pheasants though serial transmission failed; three others did not grow.—Abnormalities of the Mouse Suprarenal, by R. Whitehead (Manchester). Varix found in examining 477 mice.—Fœtal Rickets, by J. P. Maxwell and C. H. Hu (Peiping) and H. M. Turnbull (London). Another clear example of fœtal rickets in the child of an osteomalacic mother dying three days after birth; full histological description and discussion.—Tumour Immunity. II. Antiserum Treatment of Spontaneous Mouse Carcinoma, by T. Lumsden (London). The euglobulin fraction of anti-cancer (man, rat, mouse) sheep sera can invoke or increase the resistance of a proportion of mice to their own tumours.—Fat Mobilisation in Starvation, by J. H. Dible (Liverpool). The fatty infiltration of the liver caused by starvation depends on the size of the fat depôts available.—A case of Periarteritis Nodosa in a syphilitic subject, by J. Gray (Aberdeen). A rare and accidental association.—Oxygen Poisoning in Rats, by A. E. Boycott and C. L. Oakley (London). Death is caused by massive pleural effusions.

Obituary notices of R. Stenhouse Williams and A. L. Urquhart.

THE LANCET.

LONDON: SATURDAY, MAY 21, 1932.

TOXÆMIA OF PREGNANCY.

Even to-day it is impossible to assure a healthy woman that she can face pregnancy without fear of toxæmia, and Prof. J. M. Munro Kerr[1] is right in saying that few ætiological problems more urgently need solution. Despite much research, we have not yet been able to dissociate cause and effect among the changes observed, for instance, in the blood and urine, and at least four theories still hold the field—the placental theory, the maternal theory, the fœtal theory, and the pressure theory. Nor are the inter-relations of the various disorders of pregnancy adequately understood. Many people regard albuminuria as the first stage in a process which, unchecked, may lead straight on to the eclamptic fit; on the other hand, G. W. Theobald in our columns last autumn was still able to argue that albuminuria is due to mechanical causes and is unrelated to the widespread havoc associated with eclampsia. The Aschheim-Zondek test shows clearly that chemical changes occur in the female organism from the first few days after conception, and Prof. Munro Kerr holds that the grave toxæmias are in line with the mild symptoms, such as morning sickness, which may appear very early in pregnancy. He points out that it is now a matter of exact knowledge that in the early weeks there is great endocrine activity, considerable destruction of the uterine mucosa, transport of syncytium and portions of villi by the circulation, and distinct alteration of the metabolism. The placenta is degenerating from the sixth month onwards, and the products of protein autolysis may then prove the "last straw" for a long-overburdened organism. To Prof. Munro Kerr pregnancy toxæmia is the resultant of a long struggle between the protective activities of the woman's organs and tissues on the one side, and the attacking forces of endocrine secretions, digested endometrium, and metabolic disturbance on the other. He urges his students to investigate the clinical and chemical features of early pregnancy, searching above all for the clue to morning-sickness.

Several investigations into the chemistry of normal and toxic pregnancy have been published within the last few months. Some are positive and some are negative. H. J. Stander,[2] recalling an increase in blood guanidine reported by Major and Weber in cases of arterial hypertension, has made routine investigations into the blood guanidine of his eclamptic patients and of normal pregnant women at term. He did not find in eclampsia any definite or marked increase in blood guanidine, nor did he find a hypoglycæmia. The eclamptic did, however, show an increased uric acid content in the blood and a decreased CO$_2$-combining power—a phenomenon noted also by Gordon King[3] in his survey of 33 cases in China. Stander concludes, from these observations and from clinical experience, that calcium therapy is not a rational measure in eclampsia. D. F. Anderson[4] has also been unable to ascribe any effect to calcium gluconate injections beyond saying that in the doses given they had no abrupt effect on the frequency of the fits. He definitely found subnormal serum calcium values (9 mg. per 100 c.cm. or less) in 82 per cent. of 44 eclamptic women he examined, but he also found low calcium values in 17 per cent. of 35 cases of normal pregnancy which he examined at full term, during labour, or shortly after delivery. While he regards the low concentration of calcium in eclampsia and pre-eclampsia as suggestive he does not think it can be definitely regarded as an ætiological factor; we are to consider it rather as a sign, just like the raised inorganic sulphur content of the serum, which may be as high as 3·6 mg. per 100 c.cm. in eclamptic cases but is not raised in other toxæmias or in normal pregnancy (D. F. Anderson and S. L. Tompsett[5]).

In his view that eclampsia is not caused by any renal lesion, Theobald finds a supporter in H. Acosta-Sison,[6] who has made a clinico-pathological study of 28 cases. She considers that the eclampsia toxin first stimulates and irritates the bulbar centre, which may be so sensitive that it is paralysed by a dose of toxin insufficient to cause organic lesions in the heart, liver, or kidney; though as a rule organic lesions accompany severe symptoms. If the dose of toxin is excessive, extensive lesions may be caused without any of the symptoms of irritation of the centre—e.g., high blood pressure, headache, and convulsions—because the centre is paralysed from the first. Her cases show that death can take place with no more severe injury of liver or kidney than a slight cloudy swelling. Nor was anything more than cloudy swelling of liver and kidney found by N. J. Berkwitz and N. H. Lufkin[7] in their cases of pregnancy paralysis—a condition for which they prefer the term "toxic neuronitis" and which they definitely link with the other toxæmias as a form of auto-intoxication affecting the nerve-cells and peripheral nerves. They have collected 38 published cases and added four of their own, and they regard the condition, although rare, as one of great severity, demanding immediate interruption of pregnancy. Prof. Munro Kerr's emphasis on the importance of morning sickness is justified by the fact that toxic neuronitis

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[1] Edin. Med. Jour., April, 1932, p. 52.
[2] Amer. Jour. Obst. and Gyn., March, 1932, p. 373.
[3] Nat. Med. Jour. of China, 1930, xvi., 653.
[4] Brit. Jour. Exp. Path., April, 1932, p. 182.
[5] Ibid., p. 130.
[6] Amer. Jour. Obst. and Gyn., 1931, xxii., 35.
[7] Surg., Gyn., and Obst., May, 1932, p. 743.

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with the syndrome of acromegaly, or acromegalic gigantism. The more common chromophobe adenomas produce mainly signs of pressure on the optic chiasm and other neighbouring structures; apart from interference with sexual function their manifestations of endocrine disorder are not usually conspicuous and consist chiefly of slight obesity, loss of hair and certain other changes in the skin—a slight degree of the so-called "hypopituitary" syndrome. Mixtures of the acromegalic and "hypopituitary" syndromes occur, and, though further histological work with special methods of fixation and staining is necessary, it is probable that the adenomas that produce them are composed of mixtures of chromophobe and acidophile granular cells.

In all this work, around which has accumulated a vast literature, little notice has been given to pituitary adenomas composed of basophile cells. Two tumours of this type were described by J. ERDHEIM[1] in 1903, but they were extremely small and were looked upon as pathological curiosities without clinical significance. During the past 20 years cases of a curious polyglandular syndrome have been recorded by ZONDEK, PARKES WEBER, and others in which the hypophysis was found to contain an adenoma, probably or certainly basophile in type, but the authors did not regard the tumour as the cause of the syndrome. Recently, however, the claim has been put forward by HARVEY CUSHING[2] that the basophile pituitary adenoma is a tumour that produces profound and specific symptoms. CUSHING has collected 12 cases of a disorder which is characterised chiefly by a peculiar type of adiposity, sexual dystrophy, hypertrichosis, vascular hypertension, and extreme weakness. The excess of fat is confined to the face, neck, and trunk, the limbs being spared; and the skin, which is often very dry, takes on a dusky colour and presents numerous lineæ atrophicæ, so that many of the patients, both male and female, look as if they were pregnant. In some of them ecchymoses occur, in others pigmentation, and some have glycosuria and hyperglycæmia. The patients are all young adults, they complain of backache and pains in other regions and ultimately of extreme weakness, and they are apt to die of intercurrent infections, to which they show little resistance. Necropsy reveals chronic nephritis and cardiovascular hypertrophy, and often osteoporosis of the skeleton, most marked in the spine. Various changes are observed in the endocrine glands, such as cortical hyperplasia of the adrenals and atrophy of the ovaries and testes.

In three of the cases collected by CUSHING a basophile adenoma was found in the anterior pituitary lobe, and in three others an adenoma of unspecified type. In two of the verified cases the histological diagnosis was made respectively by such authorities as H. M. TURNBULL and E. J. KRAUS. In the third case the diagnosis was made in life by H. M. TEEL, a pupil of CUSHING, and the basophile adenoma was no more than 2·5 mm. in diameter and was only discovered by serial sections of the whole hypophysis. In some of the other cases the pituitary was said to be normal, but in the absence of serial sections this cannot now be regarded as conclusive evidence against a pituitary tumour. All the tumours were small and none of them gave rise to pressure on the optic chiasm.

In ascribing this syndrome to basophilic adenoma of the hypophysis CUSHING, as he freely admits, goes contrary to recent experimental work which suggests that the sex-stimulating hormone of the hypophysis is secreted by the basophile cells. If this view be correct it would not be expected that tumours of basophilic cells would produce atrophy of ovaries and testes, as has in fact been found. This question must await solution, but all clinicians and morbid anatomists will agree that in endocrinology observations on the human subject should always be preferred to those on animals, and should indeed be marshalled in judgment of the application of experimental work to clinical concepts. The facts gathered together in this paper establish a fairly strong claim that in some of the cases, but not in all, the syndrome described was due to basophile adenoma of the hypophysis. Many will doubt, however, whether the syndrome is specific, in the sense that the syndrome of acromegaly is now known to be due only to an acidophile adenoma of the hypophysis. Two cases of pluriglandular disturbance were recently carefully described by O. LEYTON, H. M. TURNBULL, and A. B. BRATTON[3] and in these the causal lesion appeared to be a carcinoma of the thymus. In both cases there was adiposity of the face and trunk, and glycosuria. The second case especially resembles most closely some of CUSHING's cases, not only in external appearance, symptoms, and death from infection, but also in the necropsy findings of cardiovascular hypertrophy, hypertrophy of the cortex of the suprarenal bodies and of the thyroid gland. It is interesting to note that CUSHING refers briefly to a case described by WIETH-PEDERSEN, of Copenhagen, in which what was evidently a somewhat similar syndrome was found in association with a malignant adrenal tumour. In view of these cases the specificity of the syndrome described must for the present remain in doubt, but not, it is to be hoped, for long: for CUSHING's paper should stimulate clinicians and pathologists alike in their efforts to disprove or substantiate his claim.

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[1] Beitr. f. Path. Anat. u. Path., 1903, xxxiii., 158.

[2] Bull. Johns Hopkins Hosp., 1932, l., 137.

[3] Jour. Path. and Bact., 1931, xxxiv., 635.

HOSPITAL CONTRIBUTORY SCHEMES AND ANNUAL SUBSCRIPTIONS.—The Birmingham and Midland Ear and Throat Hospital reports that the contributory scheme was its chief source of income for 1931, annual subscriptions having fallen considerably since the institution of the scheme which, owing to a new method of allocation, contributed £1356 less than in 1930. In-patients numbered 1195, an increase of more than 10 per cent., and the average stay was 12·88 days. In addition, 623 patients were, by arrangement, admitted to St. Chad's Hospital. There were 8575 out-patients, a decrease of 500. It is pointed out that the resources of the hospital are "quite unequal to cope with the work," and an up-to-date building is declared to be "imperative."

appears about the third or fourth month in cases of hyperemesis; indeed the paralysis may be mistaken for inanition as the result of uncontrollable vomiting.

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DIETARY SURVEYS.

THE direct experimental method has recently been applied with good effect to the science of nutrition, animals and less frequently groups of human subjects being employed to test the effect of variable dietetic factors on development and liability to disease. But another method of investigation is sometimes employed, consisting of a careful survey of the food actually consumed by selected groups of individuals over a definite period. If the subjects of such surveys are apparently normal healthy individuals it is assumed that the diets observed are more or less adequate. Moreover, it is possible from such studies to gain some information about the amounts of various food components habitually consumed by members of various classes of society, and by comparing these amounts with figures obtained in the laboratory for the food requirements of normal healthy subjects it may be possible to gauge roughly the prevalence of any marked degree of under-nutrition in a given section of society. CATHCART and his co-workers have been engaged in a series of surveys of this type, and have just published the results of their inquiry into the diet of families in Cardiff and Reading.[1] The inquiry was limited to working-class families, and comprised a total of about 370 individuals in each town. As in their previous study, carried out at St. Andrews, they found the average daily caloric value of the diets ranged fairly close to the accepted figure of 3000, and the amount of fat consumed was in both instances distinctly higher than the generally accepted average—namely, 113·6 g. in Cardiff and 100·8 g. in Reading. Special interest is attached to the analysis of the poorest diets. The mean value in 8 families in Cardiff and 12 in Reading was less than 2500 calories, and in three instances was less than 1800. It was found that this shortage of food was not occasioned solely by the smallness of the income, but arose partly through the improvidence or incapacity of one or the other parent. It appears that with very restricted incomes a distinctly smaller proportion of the weekly wages is devoted to the buying of food in these English towns than in Scottish towns, which fact is largely accounted for by the higher rents paid in the English towns. Special attention was devoted to the physique of the children belonging to the families under observation. It did not appear that any serious degree of malnutrition existed among them, although the numbers examined were too few for any decided opinion to be formed on this point.

The practical use to which dietary surveys can be put is illustrated by a circular recently issued by the United States Department of Agriculture regarding midday meals for pre-school-children.[2] The object of the circular is to suggest suitable menus for young children attending day nurseries and nursery schools. The menus are carefully constructed so that they furnish approximately the same amounts of the main food constituents and the same total energy value. These standard quantities were arrived at after a consideration of reliable surveys of the diets of normal healthy young children brought up in private families with varying incomes. Some of the main findings of four such surveys are reproduced in the present report. The mean energy value of diets of children aged 2 to 3 years varied in the different surveys between 1200 and 1400 calories; of those aged 3 to 4 between 1330 and 1500 calories; and of those aged 4 to 5 between 1430 and 1720 calories. In some of these surveys the intake of calcium, phosphorus, and iron was estimated as well as that of protein, fat, and carbohydrate, but the quantities of these mineral elements allowed in the proposed dietaries are based rather on previously published individual metabolism experiments than on the results of such surveys. Attention has been paid to the vitamin content of the diets, and free use is made of milk, eggs, salads, fresh vegetables, and cod-liver oil. The general plan of the scheme is to provide at the nursery school one-half of the estimated daily requirement of protein, phosphorus, and total energy, and rather more than one-half of the calcium and iron needed. The average cost of the raw materials for meals constructed from the proposed menus and actually served at one particular institution worked out at 17 cents (8½*d.* at par) per child per day during the first half of 1930, individual menus costing from 11 cents to 25 cents (5½*d.* to 1*s.* 0½*d.*). These figures are certainly very much higher than some recently quoted in the report[3] of the Advisory Committee on Nutrition, as representing the actual expenditure on children's food allowed by certain of the public authorities in Great Britain. From a qualitative point of view the recommendations of this committee agree well with those of the compilers of the American report.

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A NEW PITUITARY SYNDROME.

TUMOURS of the pituitary gland have always excited great interest because of the widespread disturbance that they produce both in the endocrine system and in other parts of the body. With few exceptions they are adenomas arising in the anterior lobe, a structure which is composed of three types of cell, chromophobe, acidophile granular, and basophile granular cells. Of these only chromophobe and acidophile cells have hitherto been encountered in tumours. Adenomas composed wholly or mainly of cells resembling acidophile cells of the normal gland are associated ith the syndrome of acromegaly, or acromegalic igantism. The more common chromophobe denomas produce mainly signs of pressure on the ptic chiasm and other neighbouring structures; part from interference with sexual function their ianifestations of endocrine disorder are not sually conspicuous and consist chiefly of slight besity, loss of hair and certain other changes n the skin—a slight degree of the so-called "hypo-ituitary" syndrome. Mixtures of the acromegalic nd "hypopituitary" syndromes occur, and, though urther histological work with special methods of ixation and staining is necessary, it is probable hat the adenomas that produce them are composed f mixtures of chromophobe and acidophile ranular cells.

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[1] Studies in Nutrition. An Inquiry into the Diet of Families in Cardiff and Reading. By E. P. Cathcart and A. M. T. Murray. Med. Res. Council Spec. Rep. Ser. No. 165. 1932. H.M. Stationery Office. Pp. 28. 6*d.*

[2] Midday Meals for Pre-school-children in Day Nurseries and Nursery Schools. By M. E. Sweeny and C. Chatfield. United States Dept. of Agriculture Circular No. 203. 1932. Pp. 45. 10 cents.

[3] See THE LANCET, April 9th, p. 782.

In all this work, around which has accumulated vast literature, little notice has been given to ituitary adenomas composed of basophile cells. Two tumours of this type were described by J. ERDHEIM[1] in 1903, but they were extremely mall and were looked upon as pathological uriosities without clinical significance. During he past 20 years cases of a curious polyglandular yndrome have been recorded by ZONDEK, PARKES WEBER, and others in which the hypophysis was found to contain an adenoma, probably or certainly basophile in type, but the authors did not regard the tumour as the cause of the syndrome. Recently, however, the claim has been put forward by HARVEY CUSHING[2] that the basophile pituitary adenoma is a tumour that produces profound and specific symptoms. CUSHING has collected 12 cases of a disorder which is characterised chiefly by a peculiar type of adiposity, sexual dystrophy, hypertrichosis, vascular hypertension, and extreme weakness. The excess of fat is confined to the face, neck, and trunk, the limbs being spared; and the skin, which is often very dry, takes on a dusky colour and presents numerous lineæ atrophicæ, so that many of the patients, both male and female, look as if they were pregnant. In some of them ecchymoses occur, in others pigmentation, and some have glycosuria and hyperglycæmia. The patients are all young adults, they complain of backache and pains in other regions and ultimately of extreme weakness, and they are apt to die of intercurrent infections, to which they show little resistance. Necropsy reveals chronic nephritis and cardiovascular hypertrophy, and often osteoporosis of the skeleton, most marked in the spine. Various changes are observed in the endocrine glands, such as cortical hyperplasia of the adrenals and atrophy of the ovaries and testes.

In three of the cases collected by CUSHING a basophile adenoma was found in the anterior pituitary lobe, and in three others an adenoma of unspecified type. In two of the verified cases the histological diagnosis was made respectively by such authorities as H. M. TURNBULL and E. J. KRAUS. In the third case the diagnosis was made in life by H. M. TEEL, a pupil of CUSHING, and the basophile adenoma was no more than 2·5 mm. in diameter and was only discovered by serial sections of the whole hypophysis. In some of the other cases the pituitary was said to be normal, but in the absence of serial sections this cannot now be regarded as conclusive evidence against a pituitary tumour. All the tumours were small and none of them gave rise to pressure on the optic chiasm.

In ascribing this syndrome to basophilic adenoma of the hypophysis CUSHING, as he freely admits, goes contrary to recent experimental work which suggests that the sex-stimulating hormone of the hypophysis is secreted by the basophile cells. If this view be correct it would not be expected that tumours of basophilic cells would produce atrophy of ovaries and testes, as has in fact been found. This question must await solution, but all clinicians and morbid anatomists will agree that in endocrinology observations on the human subject should always be preferred to those on animals, and should indeed be marshalled in judgment of the application of experimental work to clinical concepts. The facts gathered together in this paper establish a fairly strong claim that in some of the cases, but not in all, the syndrome described was due to basophile adenoma of the hypophysis. Many will doubt, however, whether the syndrome is specific, in the sense that the syndrome of acromegaly is now known to be due only to an acidophile adenoma of the hypophysis. Two cases of pluriglandular disturbance were recently carefully described by O. LEYTON, H. M. TURNBULL, and A. B. BRATTON[3] and in these the causal lesion appeared to be a carcinoma of the thymus. In both cases there was adiposity of the face and trunk, and glycosuria. The second case especially resembles most closely some of CUSHING's cases, not only in external appearance, symptoms, and death from infection, but also in the necropsy findings of cardiovascular hypertrophy, hypertrophy of the cortex of the suprarenal bodies and of the thyroid gland. It is interesting to note that CUSHING refers briefly to a case described by WIETH-PEDERSEN, of Copenhagen, in which what was evidently a somewhat similar syndrome was found in association with a malignant adrenal tumour. In view of these cases the specificity of the syndrome described must for the present remain in doubt, but not, it is to be hoped, for long; for CUSHING's paper should stimulate clinicians and pathologists alike in their efforts to disprove or substantiate his claim.

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[1] Beitr. f. Path. Anat. u. Path., 1903, xxxiii., 158.

[2] Bull. Johns Hopkins Hosp., 1932, l., 137.

[3] Jour. Path. and Bact., 1931, xxxiv., 635.

HOSPITAL CONTRIBUTORY SCHEMES AND ANNUAL SUBSCRIPTIONS.—The Birmingham and Midland Ear and Throat Hospital reports that the contributory scheme was its chief source of income for 1931, annual subscriptions having fallen considerably since the institution of the scheme which, owing to a new method of allocation, contributed £1356 less than in 1930. In-patients numbered 1195, an increase of more than 10 per cent., and the average stay was 12·88 days. In addition, 623 patients were, by arrangement, admitted to St. Chad's Hospital. There were 8575 out-patients, a decrease of 500. It is pointed out that the resources of the hospital are "quite unequal to cope with the work," and an up-to-date building is declared to be "imperative."

ANNOTATIONS

ROBERT BOYLE.

A DELIGHTFUL book[1] about "that pious admirable Christian, excellent philosopher, and my worthy friend, Mr. Boyle" as John Evelyn calls him in his diary, has been written by Prof. Fulton as a contribution to the *Proceedings* of the Oxford Bibliographical Society. We wonder how many people know Robert Boyle's claims on the gratitude of the scientific world. He was one of the outstanding figures in the history of science, an ardent experimenter and a prolific writer. He made a greater number of variety of discoveries than perhaps any one man will ever make again; weighing the air, the thermometer, the barometer, freezing mixtures, the gas laws, chemical elements, phosphorescence, electricity are all intimately associated with his name. And between 1659, when he published "Seraphick Love" and 1695 when "A free discourse against swearing" appeared, about 40 books of his were printed as well as a number of papers for the Philosophical Transactions of the Royal Society; he had written also a considerable mass of manuscript which was destroyed in 1688 by the breakage of a bottle of sulphuric acid. He was not a good writer—discursive and not always very clear, and his contemporaries made fun of his prolixity; his arguments were not improved by his habit of making considerable additions and alterations when his books were half printed. But his public preferred his matter to his manner, and he must have been widely read, for many of his works went into several editions in English with latin versions for continental consumption. His scientific works are more or less well known—"The Spring and Weight of the Air," "The Sceptical Chymist," "The Relation between Flame and Air," &c.—though they still wait a detailed synthetic examination in the light of modern knowledge. But his general and theological writings are unfamiliar, and there are a good many of them. "Occasional Reflections" is a volume of essays or sketches of country life in Dorset; "Seraphick Love," a treatise on sacred devotion with some remarks on the profane sort; "The Excellency of Theology" rebukes his scientific friends for their rationalistic outlook; in "Possibility of the Resurrection" he considers what can happen to a man who has been eaten by a cannibal. In the appendix is a list (1692–1929) of those who have preached the annual sermons which he endowed "for proving the Christian Religion against notorious infidels—viz., Atheists, Theists, Pagans, Jews, and Mahometans, not descending lower to any controversions that are amongst Christians themselves." He also provided the funds for an Irish translation of the Bible and promoted a scheme for a Turkish version. Prof. Fulton, whose work is published in the *Proceedings* of the Oxford Bibliographical Society (iii., pt. 1) as well as in book form, ends with a catalogue of Boyle's elegies and biographies, though we cannot discover whether there really is a monument somewhere which describes him as "the Father of Chemistry and the nephew of the Earl of Cork."

The *Proceedings* of the Oxford Bibliographical Society, with its headquarters at the Bodleian, are issued annually to members of the Society, and copies of this part, we understand, may be obtained at 10*s.* each through a member of the Society. An off-print of Prof. Fulton's charming essay has been made for the author, for presentation purposes.

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[1] A Bibliography of the Honourable Robert Boyle. By J. F. Fulton, M.A. Oxf., formerly Fellow of Magdalen College, Oxford. London: Oxford University Press. 1932. Pp. 172.

MODE OF ACTION OF VITAMIN D.

IRRADIATED ergosterol, when given in large doses to animals, causes a marked hypercalcæmia. The mechanism by which the hypercalcæmia is produced is not completely understood. There is dispute indeed over the important question of the source of the excess serum calcium. Does the parathyroid mechanism play a part? Jones, Rapoport, and Hodes (1930), Harris (1930), and Dixon and Hoyle (1928), conclude that the excess serum calcium which follows vitamin D overdosage is derived from the food, and that the vitamin increases absorption from the gut. In their last work Harris and Innes (1931) state that the excess calcium of the serum may be derived from the bones provided that the dosage of irradiated ergosterol is sufficiently large and the amount of the ingested calcium is inadequate. In face of the reports of many workers as to the effect of large doses of irradiated ergosterol in producing decalcification of the skeleton the view that vitamin D increases calcium absorption must be carefully scrutinised.

There is almost complete agreement between the chemical and morbid changes which follow the administration of large doses of parathormone and of irradiated ergosterol (Taylor, Weld, Branion, and Kay, 1931). Further, several workers have demonstrated that large doses of the parathyroid hormone cause decalcification of bone. Harris and Innes (1931) state that bone calcium is the sole source of the extra calcium resulting from parathormone administration, but draw a distinction between the action of the hormone and of irradiated ergosterol when they conclude that the latter but not the former increases calcium absorption. Having in mind the work of Hunter and Aub (1927) concerning the effect of parathormone upon the excretion of lead, Taylor and Weld[1] set out to determine whether or not irradiated ergosterol had an effect comparable to parathormone in ridding the body of lead. Cats were given daily, up to fifteen days, 15 mg. of lead acetate in solution. The dose was delivered by a syringe into the back of the mouth. A period of three weeks was allowed to elapse before administering the irradiated ergosterol in order to permit the daily excretion of lead by the bowel and kidney to reach a steady level. The administration of large doses of irradiated ergosterol at the end of this time caused the excretion of lead in the urine to mount rapidly and in some instances to increase by several hundred per cent. The fæcal excretion of lead showed little change. The appearance of large quantities of lead in the urine, and the increased urinary excretion of calcium under the influence of vitamin D indicate that the urinary lead and the associated calcium are derived from the bones rather than from the intestinal tract.

Dr. Harris in our last issue contends that the available evidence indicates rather that the parathyroid secretion and vitamin D normally function separately and independently, their effect on the blood calcium or phosphorus being only supplementary. He points out that it must be borne in mind that most past work on parathyroid function has been carried out on adult animals, sometimes on calcium-free diets and principally with very large overdoses of the hormone. The conditions, there-e, have not been comparable with those employed investigations of the action of vitamin D. He lds that the occurrence in common of such normalities as calcareous deposits in soft tissues d high urinary calcium, which is also used as an gument for the supposed identity of hyper-rathyroidism and hypervitaminosis, could be counted for as readily by regarding them as a cessary feature of the hypercalcæmia per se, ought on independently by the two disorders.

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[1] Taylor, N. B., and Weld, C. B.: Brit. Jour. Exper. Path., 1932, xiii., 109.

FUNCTIONS OF THE CAROTID BODY.

SOME important discoveries concerning the carotid ody are described by Prof. D. Danielopolu, of ucharest, and collaborators.[1] By observation and xperiment on human beings and animals they have cceeded in showing that the carotid reflex is (as hey express it) amphotropic in action; that is to ay, its effect may be pressor, depressor, or disso-iated, the reflex being produced via the two ntagonistic groups, the predominant effect being n the inhibitor. This information should help to xplain the conflicting results observed in experi-nental work and in pathological conditions affecting he carotid body. It was Czermak who first found hat compression of the vasculo-nervous bundle in he neck produced a slowing of the heart-beat, and Danielopolu who in 1920 pointed out that although the vagus was accessible to compression throughout its course in the neck yet the slowing effect was only obtained by direct compression of the carotid ganglion. In 1923 Hering showed conclusively that this cardiac effect was not a vagal effect, but a sino-carotid reflex; but he regarded the reflex as purely pressor in action—a parasympathetic stimulation. It was not until the results of the research of Danielopolu and Proca in 1924, and Danielopolu, Marcu, and Proca in 1927 were made known that it was realised that compression of the carotid ganglion produced a simultaneous stimulation of both the parasympathetic and sympathetic systems, and that the normal condition of tone of the carotid ganglion reflex was depressor—that is, the inhibitor action predominated in the two antagonistic effects. And further that in pathological conditions such as lesions of the heart, vessels, or nerves because of the modification of the tone of the vegetative system, the reverse result might be observed—namely, an excitation effect as a result of the predominance of the sympathetic. This latter result, which had been noted even in normal subjects, could never be explained on Hering's conception, but was easily understood if the hypothesis of amphotropism was accepted. Danielopolu and his colleagues now describe a number of experiments in proof of their hypothesis, and one of these may be quoted. In 1927 they published the fact that excitation of the carotid ganglion had an influence on the cerebro-spinal system in some subjects, and could produce convulsions. On this finding it was suggested that bilateral section of the nerve-fibres running to the carotid ganglion should be practised in cases of epilepsy, and this was done in three cases. The researches of Hering, confirmed by other workers, had shown that section of the nerve supplied by the glossopharyngeal to the ganglion produced a condition of tachycardia and chronic hypertension. If the carotid ganglion affected solely the parasympathetic system, and all the nerves running to it had the effect of the nerve of Hering, then bilateral section of all nerves should have produced the same effect as section of the nerve of Hering—namely, a tachycardia and a chronic hypertension. This, however, was not found to be the case, for in the three epileptics in whom this section of all the nerves was done, the tachycardia and hypertension did not develop. The absence of these phenomena constituted a further proof of the amphotropism of the tone of the carotid ganglion reflex.

REFLEX ACTIVITY IN THE NEW-BORN.

OF late years the objective study of infantile behaviour has brought to light many new facts; but their interpretation is beset with difficulties. One of these is that the neural mechanisms of the young infant are so labile that the reactions of each individual may alter considerably in a short period. In an investigation conducted at the Normal Child Development Research Clinic of the University of Pennsylvania, by Dr. Beverly Chaney and Dr. Myrtle McGraw,[1] an attempt has been made to estimate the variations which take place in the first few weeks of life, by comparing the reactions of a group of infants in the first few minutes after birth (referred to as partunates) with those of another group none of whom were more than ten days old (neonates). The authors also endeavoured, by recording the infants' responses in detail, to throw some light on the remarkable diversity of opinion expressed by different observers on certain reflexes, particularly the plantar, in infancy. All the infants examined were passed as in "good normal condition" by the accoucheur. The first group of 25 partunates was examined immediately after division of the umbilical cord. The various events in the delivery were previously timed and recorded, in case the duration of any of them might be correlated with a particular effect upon the infant. The reactions which were examined comprised the deep and superficial reflexes; sucking, grasping, blinking; pupillary reflexes and certain postural reflexes. A maximum of five successive stimuli was given for each reflex, and if no response was elicited by them it was regarded as absent. The most striking fact emerging from comparison of the two groups is that a larger percentage of deep reflexes was obtained from the partunates than from the neonates, whereas a much larger percentage of superficial reflexes was obtained from the neonates. Chaney and McGraw remark, somewhat paradoxically, that "most partunates were in a state of general muscular hypotonia, and this seemed to facilitate responses to tendon stimulation." The abdominal reflexes were present in a third of the neonates, but in only one partunate. As a general rule there was only a slight tendency for the responses to increase with successive stimuli; it appeared that repetition did not materially increase the probability of a response. The plantar reflex was studied in great detail, no less than 16 modes of response being observed and recorded. Plantar flexion of the toe was rarely seen. While a typical Babinski reflex was not often seen, dorsiflexion of toes in combination with other movements was the rule in both groups. In the neonates some form of dorsiflexion was present in 96 per cent. of cases. Sucking reflexes, elicited by inserting a rubber nipple into the mouth, were present in all but one of the neonates, but in only 16 per cent. of the partunates. The typical response of the latter was a biting movement of the jaw. A very significant difference between the groups was found in the grasping reflex, which was poorly developed in the partunates. A perceptible grasp was only recorded in 28 per cent. of the latter, as compared with nearly all of the neonates. The investigators draw attention to the variability of all reflex responses in the new-born, the variation increasing with the complexity. On the other hand, in those which have become established, such as the plantar reflex, there is nearly always a response of some kind, and its total absence should suggest a pathological condition.

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[1] Danielopolu, D., Marcu, I., Proca, G. G., and Aslan: Presse Méd., March 30th, p. 489.

[1] Bull. Neurol. Inst. New York, March, 1932, p. 1.

These experimental studies are of considerable interest to the pædiatrist, and support the common medical experience that the nature of reflex responses in young infants is of little clinical significance. They also suggest that there is nothing more than a superficial resemblance between the normal infantile responses and the pathological responses met with in adults.

CINEMATOGRAPHY OF MENTAL DEFECT.

THE comprehensive system of still photography in use at the Fountain Mental Hospital is now being supplemented by cinematography, with its obvious advantages for the recording of movement, expression, and gesture. The films shown by Dr. Noel Burke to the Section of Psychiatry of the Royal Society of Medicine on May 10th represented the first prints of the method as used at the hospital and they fully proved its value in the demonstration of various forms of mental defect. The first was a study of movements made by the younger defectives of the lower grades. Examples were shown of the simple movements, such as grimacing, head-rolling, and body-rocking, leading up to quite complicated movements of head and hands and body. These restless cases were contrasted with two children who sat apathetic and almost motionless throughout the exposure. The next film was in two parts, and gave a detailed study of each type of defective, showing the essential physical features and the behaviour peculiar to each. It began with pictures of some score of mongolian imbeciles, both singly and in groups and continued with examples of microcephaly, hydrocephaly, nævoid amentia, and nodular sclerosis. The second part was devoted to neurological cases, and showed identical twins with the same ophthalmoplegia, a full study of a case of torsion spasm, and others of diplegia, athetosis, and post-encephalitis. The last film, of treatment and training, showed the various stages of education of manual ability, leading up to useful hand-work, and of combined movements leading to complicated action dances and group behaviour. The band, formed of high-grade patients from the Darenth Training Colony, was seen playing to the children and adults of the Fountain Hospital, who responded with evident pleasure by attention, rhythmic movements or actual dancing. A picture of a summer fête, with Punch-and-Judy show and the children dancing, swinging, receiving presents, wearing paper caps, and blowing toy trumpets, concluded the demonstration. In the subsequent discussion, Dr. A. F. Tredgold called attention to the suggestive similarity between some of the movements shown in the first film and those typical of dementia præcox. He believed that the latter condition and mental deficiency were closely related. Both he and Dr. Letitia Fairfield discussed the occurrence of so-called mongolian characteristics in normal people, and their tendency to disappear in defectives of this type who reach mature years. Dr. Fairfield had noticed that the nævoid cases seemed to be affected always on the right side. She also commented on the happy appearance of the patients shown in the film, as well as of their nurses, and on the improvement that 'proper' care had produced compared with the conditions she had previously seen when certifying the same children. Dr. R. M. Stewart spoke on a number of details arising from the demonstration, and gave some suggestions to explain the movements that had been shown on the screen. Lastly Sir Robert Armstrong-Jones recalled his long experience at Earlswood, and discussed the difficult problem of the borderline child who is seen in the children's courts and thence referred for an opinion on the mental factors in his case.

THE DETECTION OF ADDED WATER IN MILK.

THE report of the Lancashire public analyst, Mr. G. D. Elsdon, for 1931 shows that great care is observed in that county to play fair by milk vendors. It has taken some 60 years, says Mr. Elsdon, to provide the methods capable of solving this problem and, if it is not now actually solved, we are at any rate in a very much better position to give an opinion than when the Sale of Food and Drugs Act was passed in 1875. It will be recalled that there is no legal standard for genuine milk, but that, according to the Sale of Milk Regulations, 1901, any milk which contains less than 3 per cent. of fat or 8·5 per cent. of solids-not-fat is presumed, until the contrary is proved, to be not genuine. All that the regulations do is to enable the prosecuting authority to describe such a milk as adulterated and to put the onus of proof to the contrary on the defendant. A milk which contains less than 8·5 per cent. of solids-not-fat is not necessarily adulterated and one which contains more than 8·5 per cent. is not necessarily genuine. This is readily appreciated when we read that the average of all the 59,118 samples, including those adulterated, taken in Lancashire during the last 22 years showed 8·89 per cent. solids-not-fat, whilst 180,000 samples in other districts averaged 8·86 per cent. In the case of all deficient milks in Lancashire an appeal-to-cow sample is obtained before going into court and records of these appeals, which are available since 1903, show that the proportion of total milk samples naturally deficient in solids-not-fat has been only 1 in 480. The appeal to the cow has been invaluable in separating naturally deficient from watered milks. The latest addition to the means of securing justice as between producer and consumer is the freezing-point test. It has been found that the freezing-point of genuine milk is its most constant known property, being depressed below 0° C. by about 0·54°. Thus the average depression of the freezing-point in 211 genuine milks examined in the county laboratory during the last three years was 0·543° and no genuine milk has ever had a value below 0·530°. Among 60 appeal-to-cow samples taken in 1931 the least depression was 0·536°. Mr. Elsdon considers that, though the average depression for genuine milk is above 0·540°, no sample should be considered as watered on the evidence of the freezing-point alone, unless the value falls below 0·530°. In several cases during 1931 an appeal-to-cow sample had apparently a freezing-point indicating added water, but in all an explanation was forthcoming. In one the sample was obtained on a dark morning with inadequate supervision and further samples, two days later, gave depressions of 0·547° and 0·549°; whilst in the others the test was the agent in discovering a leak in the cooler. Mr. Elsdon sums up by saying that the indications of the test were never in doubt during the year. With practice and an apparatus, including standardised thermometers, costing about £15, accuracy, he says, to two-thousandths of a degree, which is more than sufficient for the purpose of detecting the addition of small percentages of water, can be obtained. He further states that the method is becoming increasingly popular amongst public analysts in this country and he enumerates countries abroad where it is used officially or semi-officially.

THE ROYAL SOCIETY'S CONVERSAZIONE.

AMONG the exhibitors at the conversazione of the Royal Society on May 11th, the laboratories of the Imperial Cancer Research Fund showed examples of vital staining. Fibroblasts of embryonic and adult tissue of the mouse, growing in vitro, segregate granules of trypan-blue, but cell death results in a diffuse staining. Sarcoma cells, on the other hand, do not segregate the dye, but take it up by active phagocytosis. This failure to segregate acid dyes, such as trypan-blue, appears to distinguish cancer cells from the cells of normal tissues, and the exhibit demonstrated this difference both in killed preparations of vitally stained cells and in living cultures of malignant and non-malignant cells. The killed preparations were post-vitally stained cultures to which trypan-blue had been added during life, and included mouse sarcoma, the filtrable tumours of the fowl, mammary carcinoma of the mouse, and tar carcinoma cells. The living cultures included similar tumours, and also the normal cells of *Salamandra maculosa* vitally stained with acid and basic dyes. With Dr. R. J. Ludford's generous explanations the preparations became intelligible even to those ignorant of cytology. Dr. W. Cramer and Dr. Ludford showed also a series of slides demonstrating the effect of radium on malignant growths. Experiments in mice show that when a radio-sensitive tumour of standard size is irradiated with a dose sufficient to produce its regression immediate inoculation of the tumour cells into fresh hosts will result in the development of new tumours. If the inoculation of tumour cells is not performed until several days after irradiation, no new tumours are produced. The tumours formed from the inoculation of a recently irradiated tumour, however, grow more slowly and show a lower percentage of "takes" than those obtained from the inoculation of non-irradiated tumours. The regression of a tumour after irradiation appears to be due to an injury inflicted not only on the tumour cells, but on the tissues of the tumour bed; the process of repair and fibrosis of the normal tissues plays an important part in the destruction of the tumour. This process was shown clearly in Dr. Cramer's collection of slides, while the action of radium on the actual tumour cells was demonstrated in another series of slides shown by Dr. Ludford. The immediate action on the tumour cell appears to be on the mitochondria, which become vesicular; mitosis is inhibited, but after a time the cells increase in size. With slowly growing mammary carcinoma this enlargement is great, and masses of secretion appear in the cells. With more rapidly growing tumours there is a wave of abnormal mitosis and ultimate degeneration.

The National Physical Laboratory, in an exhibit on the technical applications of X ray crystal analysis, included the result of an investigation into the crystalline structure of teeth. The enamel is almost entirely crystalline and the dentine contains crystalline material, the crystals in both cases being composed of apatite. In dentine the crystals are arranged at random, but in enamel they tend to have their axes parallel to each other. In dogs the axes of the crystals are perpendicular to the surface of the tooth, whereas in man the axes of the crystals are at an angle to the surface. It is possible that this may have some bearing on the greater durability of dogs' teeth, but this aspect has not yet been fully investigated.

Vitamins still have their place in the sun, and the National Institute of Medical Research was showing the method of production and the biological properties of calciferol (crystalline vitamin D). From the Lister Institute Prof. J. C. G. Ledingham demonstrated preparations to illustrate the association of elementary bodies with the lesions of vaccinia and fowl-pox, their agglutination by the serum of virus-infected bodies, and the presence of the same bodies in centrifugalised virus filtrates and virus cultures. Other exhibits included an interesting experiment made at the John Innes Horticultural Institution on the X ray treatment of *Primula sinensis*. Attempts are being made to induce chromosomal and gene mutations, and the inheritance of any induced abnormality is being studied. Samples of moistened seed treated with varying doses of X rays showed considerable somatic variation on germination. The Cambridge Instrument Company, Ltd., provided a smoke recorder, which differs from previous instruments in depending, not upon transmission, but upon diffraction of light from the dust particles, and which is held to be more accurate on that account. It is intended for use in chimneys, but it can be used equally well for air, and even for liquids, though this side has not yet been developed. Robert Hooke's hygroscope, an instrument—of which no original is known to exist—to show "the driness and moisture of ambient air," had been lovingly reconstructed by Mr. George H. Gabb. It depends for its action on the hygroscopic properties of the beard of the wild oat.

TRAFFIC IN DANGEROUS DRUGS.

THE advisory committee on traffic in opium and other dangerous drugs has reported to the council of the League of Nations on the work of its fifteenth session. Some 47 ratifications of the Geneva Convention of 1925 have now been deposited. The more recent Convention of 1931 for limiting the manufacture of narcotic drugs has been signed by some 45 Powers, and moreover, it has been ratified by the President of the United States. While the statistics of manufacture of morphine, heroin, and cocaine furnished by the several producing States show considerable reductions during the last five years, there is nevertheless a vast amount of illicit traffic still carried on. The United States delegate declared that "enormous quantities of opium and of manufactured drugs coming from Turkish ports had been seized in the States." Inasmuch as Turkey is about, at long last, to accede to The Hague Convention of 1912 and to the Geneva Convention of 1925, improvement is anticipated in illicit exports therefrom to Egypt, Europe, and America. It was stated by the Indian delegate that the area now under the poppy in India is but one-fifth of what it was in 1913 and that the export of opium for smoking had been reduced in 1930 to 4882 chests against 12,231 chests in 1919. It is anticipated that such exports will cease altogether in 1935, and that the opium produced in India will thenceforth be used only for internal consumption and for transmission to England for medical and scientific purposes. The exports of opium from Persia appear to be greatly in excess of the certificated amounts; during the period from Dec. 1st, 1930, to Dec. 31st, 1931, some 4239 chests of opium, weighing over 300 tons, were exported from Bushire, sometimes in such a way as to "ensure that the loading of cargo should escape observation." In accord with resolutions passed by the Council and the assembly of the League the advisory committee, in conjunction with the secretariat, is drafting two questionaires dealing with the limitation of the cultivation of the opium poppy and the coca leaf, respectively, to be addressed to the producing countries of these raw materials from which most of the "dangerous drugs" are derived

THE DIAGNOSIS OF ERYTHROMELALGIA.

Too little is known about the conditions associated with vascular disturbances in the extremities. We have not even a satisfactory nomenclature and the text-books are apt to dismiss the different types in a short sentence. G. E. Brown,[1] of the Mayo Clinic, believes that accurate studies of surface temperature in relation to subjective distress will allow of the separation of these disorders into two groups—those with and those without local vasodilatation. He has made a particular study of erythromelalgia, and he holds that this distinction is fundamental in diagnosing the disease; thus he says that the diagnosis is warranted only in the presence of increase of vasodilatation which parallels the degree of pain or distress, when the condition is bilateral and intermittent, and when there is no primary or associated disease which would provide an explanation. He found that with one exception his series of ten cases of "true primary erythromelalgia" exhibited four of the five basic signs originally described by Weir Mitchell. These were: bilateral burning pain in the extremities; sharp increase of local heat in the affected part with redness, flushing, or congestion varying in degree; production and aggravation of the distress by heat and exercise; and relief by rest, cold, and elevation. The fifth sign, non-amenability to treatment, had some exceptions, since application of radium sometimes gave relief; but whether this relief would be lasting it was too early to say. In connexion with the surface temperature of the affected limbs, Brown was able to establish the interesting fact that when the temperature reached 33° or 34° C. pain usually became evident; conversely relief came when the temperature fell below 33° C. Augmentation in arterial pulsation and in the rate of loss of heat gave further evidence of the high degree of dilatation of the arteries. Great stress is laid in diagnosis on excluding other types of cases suffering from excessive vasodilatation in the hands and feet—as, for example, Raynaud's disease where the underlying disturbance is vasospastic rather than vasodilator, and thrombo-angeitis obliterans, where there is a definite pathological change in the vessel walls. There is no doubt that these vasomotor dystrophies are of importance to those who suffer from them, and it is no exaggeration to say that they may give endless annoyance and discomfort and occasionally such severe pain as to make a patient's life a burden. One of Brown's series, a man aged 57, had suffered from a bilateral burning pain in the feet for 20 years and in the summer months got relief by walking all day in the wet sand on the banks of a river. Wearing shoes or otherwise covering the feet caused excruciating pain, and this patient committed suicide two years after he left the clinic.

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[1] Amer. Jour. Med. Sci., April, 1932, p. 468.

EPIDEMIOLOGY OF MEASLES.

THE Health Section of the League of Nations have reviewed [1] the incidence and death-rate from measles in certain countries between the years 1919 and 1931. In most European countries 1929 was a year of light mortality, and in most of them, too, the mortality rose in 1930, though it did not exceed the average of the ten previous years. In measles, however—unlike small-pox and diphtheria for example—it is exceptional for many countries to show parallel mortality-rates. Each of them is undergoing alternating epidemics and "hypo-endemics," and the national differences between the maximum and minimum mortality-rates may vary considerably. In England the maximum is said to be three and a half times higher than the minimum, in Germany the proportion is 5 to 1, and in Scotland and Denmark it is 17 to 1. The smaller the population the larger, as a rule, the difference, because in countries with larger populations there is a relative compensation between the operation of hypo-endemics and epidemics. A seasonal influence is observable both in incidence and mortality; thus a graph illustrating the incidence of measles in Denmark shows that the minimum mortality is regularly in September. In most countries where measles is endemic the maximum incidence is observed at the end of winter and in spring. Between 1926 and 1931 92 per cent. of the annual maximums of morbidity registered in 18 countries was between December and May, and only 8 per cent. between June and November. In Spain, Portugal, and Egypt, and less clearly in Mexico, the maximum mortality tended to be during the hot season, while in the countries of eastern and northern Europe, which have a severe winter, the rise in the mortality- and morbidity-rates took place in November and December—earlier than in most European countries. As might be expected, in view of the time which the complications of measles take to cause death, the mortality curve shows a slight lag behind the incidence curve—a lag of about three weeks. Thus morbidity reaches its maximum in most countries in March, and mortality in April. The variation during the year in the case-fatality rate amounts only to about 1 per cent. The mortality-rate from bronchopneumonia runs a course strikingly parallel with the mortality-rate from measles. It is about a month in advance of the measles curve, reaching a maximum in March and a minimum in August. If the case-fatality rate of measles is calculated from the number of cases notified during one month and the number of deaths during the following month, it is evident that measles takes a graver form when bronchopneumonia is more prevalent. Carriers of streptococci and pneumococci run a greater risk than other people.

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[1] League of Nations Monthly Epidemiological Rep., 1932, No. 2, p. 47.

MEMORIAL GARDEN, ST. BARTHOLOMEW'S HOSPITAL. Miss Peggy Salaman last week opened a memorial garden presented to the nurses by Sir Herbert and Lady Cohen in memory of their son Nigel, a student at the hospital, who was killed while flying.

SPECIAL ARTICLES

REDUCTION OF MARRIED WOMEN'S SICKNESS AND DISABLEMENT BENEFITS.

By Mabel L. Ramsay, M.D., F.R.C.S. Edin.

Twenty years' experience of the working of national health insurance has at last revealed certain truths that might have been anticipated from common knowledge—i.e., that it was to be anticipated that the sickness-rate amongst women workers would be greater than amongst male workers for the reason that a certain large percentage of the women workers would be married. Marriage for the male worker usually means that his health is better looked after than before marriage. To the woman worker marriage adds to the usual illness of single life its own duties plus those of pregnancy and diseases associated thereto.

Hence I feel it was a wrong policy from the start to base an insurance scheme for women on a lower weekly premium than for men, even if the men's fund bears, as it does, the cost of maternity benefit. A business insurance company to-day charges for an all-sickness policy terminable at 65 at least 25 per cent. more to a professional woman, and excludes illness associated with pregnancy.

MORBIDITY STATISTICS AND THEIR LESSONS.

The Government Actuary, in his report[1] on the financial provisions of the Bill now before Parliament, shows a continuous rise in sickness claims from 1921 to 1927 (due no doubt to post-war depression) which have exceeded the provision made in the estimate by 17 per cent. for unmarried and by 30 per cent. for married women. Disablement claims for the same period showed an excess of 19 per cent. for unmarried and 71 per cent. for the married. Taking all societies together an additional sum of £850,000, not covered by insurance premiums, has had to be found by the Treasury—namely, for unmarried women, £430,000, for married women, £420,000. At the last valuation the numbers of unmarried insured women were given as 4,293,000, those of married insured women 1,132,000. Each individual unmarried woman has cost the fund 2*s*., and each married woman 7*s*. 6*d*. more than the estimate. Hence, Sir Alfred Watson proves quite easily that insured women as a class are receiving more than the insurance premium received can pay for.

In January last a report was issued by the Department of Health for Scotland, setting out a morbidity statistics scheme which is well worth perusal. This report states that statistical examination of doctors' certificates issued in nearly every area shows a well-defined grouping of practitioners round the area average, with a few practitioners conspicuously outside the group. This would appear to indicate a fair measure of consistency in the certification methods of practitioners with panels similarly constituted. Certain facts emerge from an analysis of the figures collected during the year July, 1930–31. In this year the incidence of incapacity in single women was equal to that found in men, but married women are certified as incapable of work twice as frequently as men or single women. Duration of illness irrespective of cause in married women is 36 per cent. higher than that for men. The average duration of illness for single women is also in excess of men by 21 per cent. Twenty per cent. of the whole sickness loss is attributed to pregnancy and its associated conditions or complications. In both men and women incapacity for work is relatively most frequent at ages under 20 years. The average duration of certified illness which began and ended was 25·95 days, and this does not cover chronic illness. The illnesses most frequently recorded were of a minor character—e.g., affections of the upper respiratory tract, accidents, and influenza, each of which accounted for 10 per cent. of the total. Inflammatory and suppurative conditions of the skin, gastritis, and bronchitis each accounted for another 5 per cent. of recorded incapacity.

Certain facts emerge from the two reports quoted above. That, with few exceptions, doctors' certification cannot be called to account; that claims for so-called minor ailments cause an average of 25·95 days' incapacity. Doubtless the earlier reference of a number of these cases to the regional medical officer would result in a shortening of duration of incapacity. Possibly a change of definition might assist: "total incapacity" rather than "incapable of work"; but definitions are difficult to render exact and intelligible to those who have to use them. Some blame has been attributed to doctors for certifying too easily, but this has not been proved. The doctor desires to be fair to both sides, patient and funds, and there is quite a large amount of evidence that he has had a great increase in his insurance work, treating a number of minor ailments which were never treated by any doctor prior to inception of national health insurance. As a corollary, if more persons are being treated more certificates will undoubtedly be given for a discovered incapacity for work.

POSSIBLE SOLUTIONS.

Now the day of reckoning has come, and Sir Alfred Watson suggests in the case of insured married women that the weekly rate shall be reduced from 12*s*. to 10*s*. for sickness benefit, and from 7*s*. 6*d*. to 5*s*. for disablement benefit, and even then that an extra halfpenny a week shall be paid by *all* insured women.

Some would suggest instead to take all married women workers out of the national scheme. But this I would deplore, for the central aim of the scheme is to maintain as far as possible the efficiency of the worker by securing early medical treatment, and thus preventing more serious disability. But, alas, the married woman worker has now got to realise that her proved incapacity amounts to too serious a charge on the funds; and that in fairness to the single woman and male worker some plan of collective responsibility must be devised. It would be possible either (1) to increase all women's insurance premiums, or (2) to reduce the benefits of the married. As the married woman secures the greatest percentage from maternity benefit, and a widow's pension (if her husband is insured), she really cannot grumble if her cash benefits are reduced slightly; for her sickness-rate associated with pregnancy lays a heavy charge on the funds.

If later on some of the surpluses of all the approved societies could be secured by way of additional benefit it might be a way to secure the retention of the benefits as paid to-day. But as the Act stands these surpluses belong to individual well-managed societies, and the moneys can only be used in approved benefits for members of those societies. To do other would mean a change in the basis of the scheme whereby the place of the approved societies as the collecting and distributing agencies should be taken by a more central and possibly more bureaucratic method, so that all insured persons secure a share in such additional benefits as are provided by the surpluses.

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[1] National Health Insurance and Contributory Pensions Bill, 1932. Report by Sir Alfred Watson. H.M. Stationery Office. Cmd. 4073. 2*d*.

My conclusion from this survey is that the National Health Insurance Acts provide a contributory scheme which has to be kept solvent. It is not a charitable fund, and no contributor can expect to get other than fair and equitable treatment. A minority of 1,132,000 married insured women must not be allowed to get more than their fair share of benefits under the present scheme. The unmarried woman will be called upon also to pay an additional halfpenny a week, partly because she also has a higher incapacity than the male worker, and partly because, even though classified as unmarried, she also does cause increase of claims when she herself suffers from diseases associated with pregnancy.

A CONFERENCE ON RADIUM.

THE following account of the origin, conclusions, and outcome of a recent conference on radium has been submitted to us:—

This Conference owed its origin to doubts emphatically and publicly expressed as to whether the policy of the Radium Commission was in certain respects mistaken, and, in particular, whether its decision to convert the existing single unit (in use at the Westminster Hospital) of 4 grammes of radium into four units of 1 gramme each was sound. There were present:—

Lord Dawson of Penn, President of the Royal College of Physicians, in the chair.

Lord Moynihan, President of the Royal College of Surgeons.

Mr. Wilfred Trotter, representing the Medical Research Council.

Sir Frederick Menzies, Chief Medical Officer, L.C.C.

Dr. Watts Eden, President of the Royal Society of Medicine.

Mr. H. S. Souttar, representing the B.M.A.

Prof. Arthur Hall, Mr. Ernest Miles, and Prof. Woodburn Morison, representing the Radium Commission.

The Conference first considered a memorandum, the salient portions of which are as follows:—

> "What this Conference can usefully do is to consider how far the Radium Centres within the purview of the Radium Commission with their equipment, measures, and men and available funds are at the present time suitable places for the use of the 4-gramme bomb.
>
> It is impossible to avoid the conclusion that the benefits from the bomb to patients under conditions existing in the Westminster Hospital have been problematical; that the use of the bomb is at present experimental, involving considerable outlay of money, and that the Westminster Hospital, which exists primarily for treating the sick poor, does not consider it justifiable to employ its funds in the prosecution of this piece of experimental medicine.
>
> When the Conference has heard the evidence on which this conclusion is based it may or may not agree with this conclusion, which would not involve condemnation of bomb therapy as such.
>
> But does it not bring us to this conclusion—namely, that the testing out of new methods of radium therapy, e.g., surface radiation and other similar problems, requires a special institute staffed by skilled radium therapeutists?
>
> England is in serious need at the present time of such a fully equipped radium institute and equally is in need of more skilled radium therapeutists.
>
> At the present time we are at serious disadvantage compared with, for example, Sweden, France, Belgium, &c., each of which countries possesses a radium institute well equipped and staffed. Our present deficiency in men and means is accounted for by the straitened condition of the national finances.
>
> The hospitals of this country are having grave difficulty in maintaining their present standard of work and have no money to institute new services."

The Conference next considered written and oral evidence, and then after full discussion unanimously passed the following resolutions:—

(1) That in view of all the circumstances, this Conference is of opinion that the Radium Commission arrived at a sound conclusion in discontinuing the use of the 4-gramme bomb at the present juncture, though this decision is without prejudice to the question of the therapeutic value of 4-gramme or even larger aggregations of radium.

(2) That in the opinion of this Conference a fully equipped radium institute is needed in London where the more difficult and speculative problems connected with radium and ray therapy can be studied by the combined efforts of a trained staff.

The Conference was in agreement with the Radium Commission that a scientific inquiry on certain aspects of the radium problem would be of value, and after discussion unanimously passed the following resolution:—

(3) That in the opinion of the Conference an expert committee should be appointed with the following references:—

1. What is the scientific case for mass radiation by radium, and what are the advantages and dangers attaching to the use of such radiation?

2. What are the advantages and risks of massive surface radiation by radium compared with those of radium needles and radon seeds?

This committee to obtain any evidence and seek any information which it may think necessary; *its proceedings to be private and its report to be made to the Conference.*

The following is the constitution of this technical committee:—

Lord Dawson of Penn, P.R.C.P.

Lord Moynihan, P.R.C.S.

Chairman.—Mr. Henry Souttar.

Physics.—Lord Rayleigh, F.R.S., Prof. J. C. M'Lennan, F.R.S.

Radiotherapy and Medicine.—Dr. Roy Ward, Radium Institute; Dr. G. F. Stebbing, Lambeth Hospital, L.C.C.; Dr. B. W. Windeyer, Middlesex Hospital.

Surgery.—Mr. Cecil Rowntree, Cancer Hospital; Mr. Geoffrey Keynes, St. Bartholomew's Hospital.

Gynæcology.—Mr. Louis Rivett, Middlesex Hospital; Dr. Elizabeth Hurdon, Marie Curie Hospital.

Experimental Radiation.—Dr. W. Cramer, Imperial Cancer Research Fund Laboratory.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

THE SWEEPSTAKES AND TAXATION.

IT was hardly to be expected that the large sums of money reaching Ireland in connexion with the sweepstakes would not, sooner or later, excite the envy of some Minister for Finance, and, therefore, it was no surprise when the new Minister, who is seeking for money wherever he can get it, and probably in some places where he cannot, announced his intention of making a swoop on the receipts from the sweepstakes. It had been rumoured in advance of the Budget statement that it was proposed to impose a tax of from 5 to 15 per cent., according to different stories, on the gross receipts of the sweepstakes. What is to be done is something different, although the precise procedure is still uncertain. The statement made in the Dáil by the Minister was :—

> "I shall have to turn to the proceeds of the sweepstakes. I have had to consider many proposals in this regard. They were rejected in favour of one which was submitted by the emergency committee of the hospitals, and which outshone all others in its attractive simplicity. I propose to levy 25 per cent. on the hospitals' share of the proceeds of all sweepstakes drawn after March 1st, 1932. This, I hope, will bring in not less than £650,000 this year. In view of this change in the original scheme of the sweepstakes I propose to ask my colleagues on the Executive Council to reconsider the present allocation between public and county hospitals of the proceeds of the sweepstake."

What is not clear is whether the proposed levy is to be a special tax or the ordinary income-tax. The proposal of the committee of the sweepstakes to which the Minister agreed was that the hospital receipts from the sweepstakes should be subjected to the ordinary rate of income-tax. Their reason for this is said to be that they fear that a statement on the face or back of the ticket that the receipts were subject to a special tax would interfere with the sale of tickets. But in the Minister's statement there is no reference to income-tax. Moreover, although the rate of income-tax imposed in the present Budget is 5*s.* in the pound, or 25 per cent., the tax during the last half of the previous financial year, into which the drawing in March falls, was only 3*s.* 6*d.* in the pound. The Minister can hardly intend to make the new tax retrospective, particularly in regard to an income which had been specifically exempted from taxation by previous legislation. There is a good deal of difference of opinion among those interested in the hospitals as to whether a special tax or the ordinary income-tax is the less dangerous method of procedure. While it is recognised that the announcement of a special tax may affect the sale of tickets injuriously, there is a grave objection to establishing the precedent of imposing income-tax on hospital revenues. Hitherto the income of a hospital as a public charity has been exempt from income-tax, and it is feared that a future Minister may regard as a precedent for taxation of the ordinary income of a hospital the taxation now to be imposed on income from a special source.

THE BUDGET AND MEDICINE.

Apart from the tax now to be imposed on the sweepstakes' funds the new Budget touches in other respects on the interests of the public health and on the working of the medical profession. It is proposed to make a sum of £5,000,000 available for building. On the other hand, however, the costs of building are likely to be greatly increased by the new duties which will press specially heavily on builders' materials. Again, a sum of £100,000 is to be provided for the supply of milk to poor children. The application of the entertainments tax to physical exercises, games, and athletic sports will interfere with the pursuit of these means to health and physical efficiency. Some years ago the legislature recognised the educational and hygienic value of open-air sports, and exempted them from the entertainment tax. The fresh imposition of it is a retrograde step. One of the new duties—the "package tax," a tax of 2*d.* on every parcel or packet or bottle ready for sale which enters the country—is likely to cause grave inconvenience in medical practice. The Minister states that his object in imposing this tax is, in the first instance, to raise revenue, and, in the second, to increase employment by causing the packing or parcelling to be done in the Irish Free State. He overlooks that the label on a closed packet or bottle is a guarantee that the article is the product of a particular maker. In future, the purchaser must either forego this guarantee or pay 2*d.* for it each time. The tax will certainly increase the price of proprietary preparations appreciably.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

UNQUALIFIED PRACTICE IN HUNGARY.

In the present depressing conditions it is not to be wondered at that the profession is eager to track out all factors that may damage medical practice. The Hungarian law prohibits unqualified individuals from treating patients for gain, and from carrying on such practice as a breadwinning occupation. This definition is not satisfactory, for unqualified persons can evade it by engaging qualified physicians to work with them, or by other means. The Minister of Public Welfare, in view of the great increase in unqualified practice, has recently asked that the law should be tightened up, and that offences against it should be dealt with in the higher courts instead of, as now, by magistrates. The Minister of Justice did not make this change, but he has instructed magistrates to deal more severely with proved cases of overt breach of the law. A more difficult problem is that of the pharmacist-prescriber. Pharmacists are entitled to make up compounds according to medical prescriptions, and to sell drugs asked for by customers by name—for instance, aspirin, camphor liniment, or tincture of iodine. But if a customer asks for "something for" headache, or heartburn, or pain in the back, and the chemist sells him pyramidon, milk of magnesia, with perhaps the addition of belladonna, he commits an offence. A pharmacist must not explain the directions given on the use of drugs, and still less may he answer questions put by customers on the kind of life they ought to lead when taking certain drugs. If this enactment were strictly applied, hardly a single chemist would escape punishment. The medical profession tacitly acknowledges that right of the public to buy household remedies from the chemist, without consulting doctors. But it raises objections against the practice which nowadays is quite common whereby a patient actually consults the chemist and takes his advice and medicine. A chemist may prescribe and dispense, say tinct. opii, for a patient who comes complaining of abdominal pain ; if the drops do not cure the pain the chemist suggests some narcotic tablets. This is the sort of case in which the doctor may be called in at a late stage to establish a diagnosis of perforated appendicitis. The chemist who is reported for prescribing remedies for gonorrhœa, chronic eczema, varicose ulcers, and hæmorrhoids, is fined so little if the charge is proved that it pays him to continue this practice. The Society of Physicians of Leopold City, a district of Budapest, have brought up the matter, with some notable examples, in the hope that action will be taken in the matter.

THE INFLUENZA EPIDEMIC.

This year the influenza epidemic presented itself considerably later than in former years. While its usual advent in Hungary falls in the second half of January, this year it appeared in the second third of February. The epidemic was unusually widespread, the number of cases being very large, particularly in late February and early March. In some houses almost all members of the family contracted the disease. Schools and some offices had to be closed. The Budapest Court could not hold sessions because three-fourths of the judges were in bed. Fortunately the majority of cases were mild, and passed off without serious complications. Of the latter, bronchitis and indigestion were most frequent. The mortality was fairly low. In Budapest, at the height of the epidemic, there were on an average two fatalities daily, mostly due to pneumonia. The epidemic lasted up to the end of March.

MEDICINE AND THE LAW.

"Osteopathic Physician and Surgeon."

THE broad effect of Section 40 of the Medical Act is to forbid an unregistered practitioner to call himself a physician or surgeon. The Act, be it never forgotten, was passed with the express object that persons requiring medical aid "should be enabled to distinguish qualified from unqualified practitioners." Somehow an idea has gained currency that the words physician and surgeon may safely be used by an unregistered person if only they are embroidered in their context, and that, for instance, the adjectival description "osteopathic physician and surgeon" may be assumed with impunity. The belief seems to be attributable to the early decision in Ladd *v.* Gould, a case in which a dentist had described himself as a "surgeon and mechanical dentist." The magistrates then came to the benevolent conclusion that the word "surgeon" was merely used to indicate what branches of dentistry the defendant carried on, and not to represent him as a surgeon within the Medical Act. The result of this somewhat curious finding of fact was that the High Court ruled that the defendant had not unlawfully taken the title of surgeon. The case was decided in 1860, only two years after the Medical Act had been passed; it depended upon the special facts found and its authority is now doubtful.

In an important decision on May 11th the High Court has ruled that the name-plate of an unregistered practitioner which bore the words "Prof. A. E. Shakesby, D.O. (Lond.), Bonesetter, Osteopathic Physician and Surgeon," is an infringement of Section 40 and justifies a conviction. The Marylebone Police-court magistrate found that Mr. Shakesby was not registered under the Medical Act; he was not a legally qualified medical practitioner within the statutory meaning. He described himself as a doctor of osteopathy and an honorary member of the Incorporated Association of Osteopaths, Ltd. He held a certificate issued by the Association, but the court had no evidence of what examinations had to be passed before the certificate could be awarded. The Association issues a directory which contained the statement "Each member has a right under the articles of association to the title of osteopathic physician and surgeon." It would be strange if the Association could by such a statement repeal Section 40 of the Medical Act, but the significance of the statement is that Section 40 contains the words "wilfully and falsely," and that Mr. Shakesby, having been thus assured by the statement, might honestly believe he was entitled to describe himself as he did. These words "wilfully and falsely" (which the equivalent statutory provisions relating to registered dentists and veterinary surgeons manage to do without) are an element of the offence under Section 40. It was argued for Mr. Shakesby that he was entitled to describe himself as a bonesetter and to amplify that description by adding "osteopathic physician and surgeon"; the words "bonesetter" and "osteopathic," it was said, so qualified the description "physician and surgeon" as not to imply that Mr. Shakesby was registered under the Act. If he honestly believed he could so describe himself, he had not taken the description "wilfully and falsely," even if his belief was wrong. The magistrate held that the titles had been used "wilfully" but in view of the qualifying and amplifying words in the context, not "falsely." This meant that the offence had not been established in all its ingredients; the informations against Mr. Shakesby were therefore dismissed. On appeal the magistrate was held to have been wrong. The King's Bench Division has remitted the case to him with a direction to convict. Dealing with the argument about qualifying and amplifying words, the Lord Chief Justice observed that Mr. Shakesby's counsel seemed to be urging two contradictory things. He had argued that the words "physician and surgeon" could be ignored as mere surplusage; simultaneously he was suggesting that the words were used because they were "something grander" than the word "bonesetter." Then, by asking one penetrating question and answering it himself, Lord Hewart put the case for us in a nutshell. Why were "physician and surgeon" something grander? Because they appeared to suggest that Mr. Shakesby had qualifications which in fact he had not and which the Medical Act forbade him to assume.

The High Court decision, it will be noticed, moves in the direction of an absolute prohibition against the use of the descriptions "physician" and "surgeon" by an unregistered practitioner. Was not this the intention of the Medical Act as expressed in its preamble?

Pay-beds at the Miller General Hospital.

A year ago Mr. Justice Farwell made an order that the Miller General Hospital for South-East London might for twelve months appropriate 20 beds to paying patients. As explained at the time, the original constitution of the hospital made no provision for paying patients; the hospital is dependent almost entirely upon subscriptions, donations, and legacies which nowadays are a somewhat precarious source of income. The twelve months having elapsed, fresh application was made to the Court. Mr. Justice Farwell renewed the order, with minor modifications, till May 15th, 1937. The maximum number of pay-beds remains at 20 under the new order; these may be in any part of the hospital and may include all or any of the eight beds in private rooms; as far as possible, the private patients in cubicles in the wards are to be kept together in adjoining cubicles; the board may use any private room for a paying patient if in the opinion of the medical or surgical authorities the room is not required for a non-paying patient owing to his condition. The charge for the pay-beds is not to exceed seven guineas a week.

PANEL AND CONTRACT PRACTICE

NATIONAL HEALTH INSURANCE BILL.

The Minister's Introduction.

ON Wednesday of last week in the House of Commons Sir E. HILTON YOUNG (Minister of Health) moved the second reading of the National Health Insurance and Contributory Pensions Bill, designed, he said, to ensure the financial stability of a scheme which had for 20 years become increasingly interwoven with the social structure of the country. Under it there were 17 million insured persons who contributed year by year no less a sum than 26 million pounds. The Exchequer contribution, the sum which the nation paid in to the assistance of the scheme, was 6½ million pounds a year. In the course of the last 20 years no less than 434 million pounds had been expended in benefits. The organisation by which the scheme was administered was in the hands of 7600 approved societies and branches of societies.

FOREWARNINGS OF DISASTER.

For the first 10 to 15 years the finances saw nothing but prosperity. Large surpluses were earned, and in consequence large additional benefits could be paid—no less than 21 million pounds in the last ten years; and owing to those earlier years of prosperity, very large reserves had been accumulated by the societies—no less than 117 million pounds. For the greater part those reserves were earmarked against the positive actuarial liabilities of the societies, so that not the whole of that 117 million pounds was free for additional benefits. With the change which had unfortunately come about in the circumstances of the nation came a change in the circumstances of the scheme. A threat to the absolute stability of the finances of the scheme was foreshadowed some years ago. About two years ago his predecessor called for a special report. In that report they saw the first foreshadowing of what was beginning to be threatening in the circumstances of the scheme, because the principal circumstance that that report brought out was a very startling increase in the sickness experience of married women, which in the years 1921 to 1927 had increased, as regards sickness benefit, by no less than 106 per cent. above expectation, and, as regards disablement benefit, by no less than 159 per cent. above expectation.

In consequence of this warning, the Minister of Health issued a circular, in 1931, in which he sought the following remedies—*namely*, a more careful supervision of claims made and *better* medical certification in respect of the claims: in other words, a closer scrutiny of claims made against the insurance fund. Unfortunately, those remedies proved neither sufficiently deep nor wide enough to meet the case, and, *after that forewarning, there came the* severity of depression, and, with the severity of depression in the country as a whole, it became obvious that something was seriously amiss with the finances of national health insurance. Things were beginning to be unduly unfavourable on both sides of the account. Claims were increasing, and particularly in respect of the women's claims, more especially married women. On the other side of the account—the contribution income—a new menace *appeared. This* second menace was entirely due to the growth of unemployment. Contributors were constantly falling into arrears with their contributions, and the income from contributions was consequently falling off.

GOVERNMENT ACTUARY'S REPORT.

After those forewarnings at the beginning of this year the blow fell in the form of the actuary's report upon the scheme for the third valuation period. The situation it revealed was this: the valuation showed that they had arrived at a point at which the health insurance scheme was living upon its accumulations. During the period from the first to the second valuation, that was, during the period of prosperity, the surplus assets of the approved societies grew by no less than 25 million pounds. During the period of the second to the third valuation the surplus had increased by 12½ million pounds only, that was, half the previous increase, and, what was more unfortunate, that increase was an illusory one, because it was due, as to about half, to interest upon funds previously accumulated, upon which they must now be drawing, and as to the second part of it, to non-recurring margins. The increase of surplus assets at the last period was, therefore, illusory, and as things stood at present the rate of increase in the surplus assets of the approved societies and of the scheme as a whole was, in substance, nil. They had arrived, therefore, at a point at which, without an increase of surplus assets, the future held nothing but the necessity of living upon accumulations.

That state of affairs found its expression, of course, in the reaction upon the additional benefits. After the second valuation no less than 95 per cent. of the approved societies could, and did, give additional benefits. After the third valuation additional benefits had had to be reduced for *6¼ millions out of 17 millions*, and, *more unfortunately still*, in respect of no less than 4¼ million contributors the additional benefits had had *to be discontinued altogether*. The most menacing feature of all was that no fewer than 418 *societies and branches found themselves* not only in a position not to give additional benefits, but actually with a deficiency; that was if they did not fall back upon central aid they would not be in a position to pay the very *minimum of statutory benefits* which the scheme required. The Government actuary in reporting on the state of affairs said: "*Existing* surpluses provide only a temporary bulwark, and serious deficiencies are in prospect."

THE THREAT OF BREAKDOWN.

If, said Sir Hilton, they went on as they were going with *National Health* Insurance, at the end of the next valuation period there would be widespread deficiencies among the approved societies. They would be unable to pay the statutory benefits which the scheme required. The deficiencies would be so great that the resources of the scheme would be unable to meet them, the scheme would be insolvent and would break down. This scheme had been, in a way, the pride of our social organisation, and we had boasted of its financial aspects as an example to the world. Prompt action was absolutely necessary, and it must be based upon two principles. First of all, they must secure the solvency of the scheme. In the second place, they must maintain the other foundation-stone of the scheme, which was that it was a contributory scheme—a scheme based upon the principle that people got what they paid for. It was that contributory element which they should look upon as having to be absolutely preserved and fortified in anything that was done.

The *first* cause of the threatened breakdown was the increase in the sickness experience, and that was particularly the case in regard to the women's claims, and more especially in respect of the married women. During the last valuation period the sickness and disablement benefit paid to women was nearly 4 *million* pounds in excess of the actuarial provision; that was after every allowance had been made for a reasonable increase to be normally expected it was found that the claims for women during the period was 4 million pounds in excess of the expectation. The excess was greatest at the end of *the period*—the last year of the valuation. The report by the Government actuary showed that during the years 1928–30, after the valuation, the average *expenditure on* sickness and disablement benefits of women exclusive of the State grant exceeded the provision made for it by no less than £850,000 a year. *This* increase over expectation had got worse and worse. *The* average yearly loss per head on married women was 3½ times greater than it was with respect to *unmarried* women.

Only two things could be done. They must either increase the contributions or decrease the benefits. In *order* to make both ends meet by raising the contributions they would have to increase them for all women from 8½*d.* to 10*d.* The result of that would be that they would have to make the woman's contribution to the scheme higher than the man's contribution. With the increase of contributions for unemployment and pensions there was the strongest possible reason against making further increases in contributions for national health insurance; and, when they looked round at the general conditions of the nation and at the industrial depression, and considered the remedies which were appropriate for our national disorder, the House would come to the conclusion that it was frankly impossible to place any fresh burden in the form of increased contributions upon either the employer or the employed. (Cheers.)

PROPOSED DECREASES.

The House was already acquainted from the White Paper with the nature of the decreases which he proposed. There were one or two points that deserved special consideration. Discrimination was made between married and unmarried women. It would be unfair to call upon unmarried women to bear the burden incurred owing to the increase of claims by married women. The unmarried women in the scheme were to married women as four to one. There was, too, a difference between the economic position of the married woman and that of the unmarried woman. Even after the reductions in benefits they would still be above the pre-war level, and would still be substantial benefits. As a result of this adjustment they would return to what he thought was a due proportion between sickness benefit and disablement benefit, the benefit which followed after the first period of sickness was over. It was always looked upon as a good rule that disablement benefit should be half sickness benefit, and they were now re-establishing that just proportion. Undoubtedly the benefits were not as great as they had been, or as they would like them to be, but what was the intention of national health insurance? After all, it was only to provide an assured minimum; it made no pretence of being able to provide maintenance. By the adjustments which he proposed, not a single penny was taken from the fund. All the money that was there before was still there; it was simply a matter of adjustment to make sure that the money went round and that the scheme did not break down.

There was another menace to the scheme on the other side of the account which was wrapped up with the question of arrears. The cause of the difficulty was the system established in 1928. That system turned out to be too big a burden for the finances of the scheme to bear. The system was that all arrears of contribution because of unemployment were totally excused. The burden that was thrown upon the funds of the societies in the then state of unemployment was £700,000 a year. Of that £500,000 was met out of the central fund by an adjustment of the unclaimed stamps account. Only £200,000 was thrown upon the finances of the approved societies. But with unemployment in its present condition of severity the burden which this method of excusing all arrears threw upon the finances of the fund was 2½ million pounds a year. Of that, 2 million pounds had to be borne by the societies, and the funds available from the unclaimed stamps account were failing. That burden of 2 million pounds upon the funds of the societies was too heavy to be borne, and the societies could not continue it without being driven down into deficiencies, and practically into insolvency. It was urgently necessary that an intervention should be made in order to relieve them from this burden, which had proved intolerable.

The proposal was that arrears due to unemployment should be excused to the extent of one-half, the remaining one-half, less an allowance of two contributions, to be met by the insured person if he wished to cover himself for full benefits. This proposal would result in a scheme of arrears very much as before 1928. Arrears were to be excused in any case during the weeks of notified incapacity. Powers were taken to ensure that, if there was any improvement in the unemployment position, more generous treatment could be given by the excusal of more than one-half of the arrears due to unemployment. In approaching this question he had tried to do what was necessary to make things safe, but not to do anything more than was necessary in the hope of things improving, and to take power to put things back into a better state of affairs than they were before if and when the general finances of the scheme enabled him to do so. The result of the scheme with regard to arrears was that it would reduce the burden on societies by one-half, that was by 1 million pounds a year; 1 million pounds a year would still be borne by the societies, and the other million pounds would fall upon the contributors. This scheme had been submitted to the Consultative Council, and they agreed that it was the legitimate and right way of dealing with the matter.

DRAWING ON THE CENTRAL RESERVE FUND.

There was a further protection which he proposed to give to the finances of the approved societies. It was not right that, owing to this burden of arrears due to unemployment, the finances of any society should be driven into a deficiency. He therefore proposed that, if any society found itself in danger of a deficiency, owing to the burden due to arrears, it should receive a grant of the balance necessary to avoid a deficiency from the central reserve fund, and it should receive that grant in priority to any claim upon its reserves. The consequence of that would be to spread the burden of avoiding deficiencies due to arrears over the central finances of the scheme. These two proposals in respect of benefits and contributions did not wholly satisfy the actuarial demands. He had not gone so far as the most rigid standard of actuarial requirements went, but he was entitled, as hon. Members would see by reference to the report of the Government actuary, to count on an improvement in respect of claims owing to that improvement in administration which was inaugurated by Mr. Greenwood when he was Minister of Health. He (Sir Hilton) was told that it was not unreasonable to count on an improvement of 10 per cent. in respect of claims owing to the improvement in administration. If that were so, they would, by these two measures, as far as it was reasonable to foresee, assure the financial solvency of the finances of the health insurance scheme. He did not mean to say that there was not an element of uncertainty. He had felt it right in the present condition of the nation's finances to stretch a point and to take a risk, so long as it was not an unreasonable risk, while avoiding going further at the moment than was necessary for the recovery of the general prosperity of the nation.

PROLONGATION IN INSURANCE.

At the end of his speech Sir Hilton Young turned to the question of prolongation in insurance of the unemployed who, because of the failure of their contributions, would otherwise go out of insurance altogether, losing all their insurance rights, their rights to sickness benefit, medical benefit, and lastly, and worst, losing their rights to the widows' and old-age pensions at 65. Unless something was done some 80,000 men and women would pass completely out of insurance owing to unemployment. The general effect of his proposal would be that under the national health insurance scheme every unemployed man and woman would have five and a half years' free insurance without contribution, and for pensions' insurance the average unemployed man or woman would have ten years' insurance for only two and a half years' contributions. At the end of this period of prolongation they would revert to the present system of an average of 21 months' free insurance for all persons after their contributions ceased, and, on the top of that, one year of free insurance. There was one other proposed alteration great importance. At present, after a man arrived the age of 60. he was continued in insurance, hether employed or not, until the age of 65 in order qualify for the old-age pension. It had been found at an extension of that privilege could be given by ducing the age of 60 to 58½. This and other ovisions of this Bill, Sir Hilton said, had the support d approval of the approved societies.

Motion for Rejection.

Mr. RHYS DAVIES moved the rejection of the Bill. le said that he agreed that they must secure the lvency of the scheme, and he thought that there as no section of the community that was not anxious see the scheme based on insurance and actuarial rinciples. But if the original contracts had been arried out by the State, and the usual subsidy to hese funds had been continued, the surplus of the hird valuation would have been equal to that on the econd. In spite of all that had been said about he scheme it was still as it stood the safest and oundest social insurance scheme in the world. Had t not been for the fact that the Ministry induced nost of the approved societies to separate for valuaion purposes the funds of the men from those of the vomen he was positive that those societies would iever have had reason to complain of the heavy laims of married women. The problem would never have arisen in such an acute form. He was quite sincere in his opinion that the Ministry of Health could on the financial points of this Bill have found a way of doing all that they desired in respect of the married women without reducing their benefits.

ALLEGED LOOSE CERTIFICATION.

A large proportion of the increase in the sickness claims of married women, said Mr. Davies, came from the loose certification of the panel practitioners. The number of medical men in this country was, he believed, growing in proportion to the number of the population. He did not dispute that the doctors must have a livelihood, but the medical practitioner to-day was not adopting the same attitude towards panel practice as he used to adopt when he was employed by the old friendly societies. If the panel practitioner of 1932 did his work as conscientiously as his predecessors did for the friendly societies 20 years ago the House would not be faced with the problem of married women's claims to-day. The Ministry of Health had been so dissatisfied with some panel practitioners that they had set up what was called a regional medical service which took an oversight over the work of the panel practitioner. Approved societies that were dissatisfied with the certification of the ordinary panel practitioner sent thousands of cases annually for second medical opinion. Were it not for the work of the regional medical officer, the percentage of this increase might easily reach double what it was now. The Ministry of Health had done a great deal in regard to this problem. They knew as well as the administrators of the approved societies that the situation regarding certification was very unsatisfactory. In his view the medical practitioners who were dealing with national health insurance ought to be employed by the State. He saw no other way to secure proper certification.

Mr. McGOVERN: Is the hon. Member suggesting that the medical profession are passing people for benefit who are not suffering from illness?

Mr. DAVIES: The real fact is that the average panel doctor is doing his work well, but there are certain practitioners who are known to be granting medical certificates improperly.

Mr. MAXTON: What is the motive?

Mr. HOWARD said that if they did away with the opportunity which was allowed to patients to transfer from one practitioner to another they would prevent the granting of these easy certificates.

Mr. DAVIES said that that was exactly his point. This problem of the medical profession was not a new one. Those who administered the scheme knew too of the extravagant claims of some dentists, opticians, and surgical instrument makers. He believed that by adopting a better system of administration, by securing better medical certification, and by the elimination of what he termed uninsurable types of cases from the scheme, it would still be possible to save the married women and the single women from any reduction of benefits.

A SPECIAL CLASS FOR MARRIED WOMEN.

Mr. LLEWELLYN-JONES said that some of those who were associated with the administration of national health insurance felt that this Bill did not go far enough, and that the whole position would not be safeguarded by this measure. Therefore on the committee stage it was proposed to put down an amendment which contemplated that all married women should automatically be transferred to a special class as from the date of marriage and become entitled to the benefits of that class, whether or not they continued in employment; and that those who ceased employment would ultimately pass out of insurance in the same manner as at present; whereas those who continued in employment would requalify for full insurance by shorter waiting periods than at present. He was satisfied, however, that legislation alone was not going to clear up the grievances of which they had to complain. Very strong stern administrative action would be required.

He disagreed with the attack which had been made on the panel practitioners by Mr. Rhys Davies. For over 20 years he had sat as chairman of the Insurance Committee for his county of Flint, and he could not remember a single case of a complaint by an approved society against a medical man in his county as regarded irregular certification. On the whole he believed that the great mass of medical practitioners on the panel endeavoured to administer the Act in the most straightforward manner in the interests of their patients.

Mr. DAVIES said that that was exactly what he had said, but he pointed out that if 2 per cent. did not do the right thing it was damaging to the funds of the societies.

Mr. LLEWELLYN-JONES said that he could not agree with the line which his hon. friend had taken. He had made a very bitter attack upon the medical profession. He was quite sure that if complaints about improper certification by doctors were reported to the British Medical Association immediate action would be taken. But he (Mr. Llewellyn-Jones) did not wish it to be understood that he thought that the medical profession could not have done more than they had done in the matter of certification. It was a very easy thing for a medical man to err on the wrong side. The difficulty of the medical man was very much greater in the case of women, particularly of married women, than in the case of the ordinary worker.

REMEDIES.

During the past few months, Mr. Llewellyn-Jones continued, an attempt had been made by insurance committees with the concurrence of the Ministry of Health to arrange for conferences of medical men, representatives of insurance committees and of friendly societies, and he was satisfied that those conferences had resulted in a vast amount of good. In regard to the question of certification and excessive claims on societies, he was not satisfied that societies had done all that they could. He thought that the system of sick visiting was of very little value. It was only by constant vigilance that they could get off the books of the approved societies persons who were malingering.

Mr. MELLER said he had spoken in the past with regard to medical men and health insurance, but he was not prepared to say that bad medical service was so widespread as to make the difference between the expected sickness experience and the actual.

In the main he believed that the doctors rendered excellent service. It was a matter for coöperation between all parties concerned in this question of health insurance. A deputation representing all types of approved societies had waited on the Minister and had expressed their firm conviction that the present position of affairs must be met in the way the Minister of Health had met it. He hoped that the Minister, having taken the advice which was tendered to him in the interests of the societies and of the insured persons, would also take the advice which would be tendered to him in the form of a new clause which would be submitted in Committee to extend the differentiation between married women and single women. Otherwise he agreed with the main principles of the Bill.

THE PRINCIPLE OF EQUALITY.

Miss **RATHBONE** asked the Minister whether the method adopted in the Bill was the only possible means of meeting the deficiency. Might it not be possible to meet it by some form of pooling the surpluses of those societies, a very substantial number, which still had such large disposable surpluses that they were able to give substantial additional benefits. Was it not right that in a State system of insurance, contributed to by the State, the principle of equality should be carried at least far enough to assure that the rates of benefit necessary for subsistence should be paid to everybody before any group of fortunate contributors were allowed to enjoy additional benefits ? She did not think that it was beyond the power of the Minister of Health to devise such a method if he wished to do so. She would have no hesitation in opposing the Bill as long as it remained in its present form.

SOLVENCY OR HEALTH ?

Mr. **MAXTON**, in supporting the motion for the rejection of the Bill, asked if the Minister of Health ought to allow the question of the solvency of the fund to take first importance in his mind. The main purpose of the national health insurance scheme was the maintenance of the general health of the community. One of the most obstinate problems was that of the maternal death-rate in childbirth, and he urged the Minister to bear that matter in mind when he picked out the married women as the special instrument for achieving a solvent balance-sheet. He asked the right hon. gentleman if it was sound national economy to risk a serious deterioration in the health of the nation. The Government were asking the sick women to shoulder an added burden to save the nation from collapse.

A SCOTTISH SCHEME.

Mr. **SKELTON** (Under Secretary of State for Scotland) said that the Bill would, to a considerable extent, solve the problem of arrears which had pressed so heavily on the Scottish friendly societies. The Scottish Department had attempted to solve the problem of the increase in the claims of married women. Their report would show what had happened since June, 1930, in relation to sickness and insured persons in Scotland, and the report would tabulate the number of certificates given by medical men. That would furnish a double check on how far in certain districts certain complaints and ailments were prevalent, and the kind of proportions in which medical men gave certificates. That would furnish a very real addition to their knowledge of the question of insurance medical benefit. The first report, for the year from July 1st, 1930, to June 30th, 1931, would be published shortly.

THE MEDICAL VIEW.

Lieut.-Colonel **FREMANTLE** said that he was much interested in the scheme which had just been propounded by the Under Secretary for Scotland—a kind of sleuth-hound, Sherlock Holmes scheme for the investigation of the crimes or otherwise of the medical profession in this matter. Of all those who were concerned with the question of the health of the people generally, none would wish more strongly than the medical men themselves that this inquiry should be successful in running down any real negligence on the part of the panel practitioner. No one could be a friend of the medical profession, or of the panel practitioner in particular, who in any way supported any suggestion of laxity on their part. It was true that a panel doctor often knew, while the regional medical officer who came in from outside did not know, the real human side of a case, and that had to be considered in regard to the difficulty about certification. If these matters were to be judged by bureaucratic methods, and if one doctor who certified 50 per cent. more patients than another was to be adjudged wrong, it would reduce the whole thing to ridicule.

They could not, he went on, judge human action by percentages. Material facts could perhaps be so judged but they were dealing in this instance, not with material facts, but with human judgment, and that was the difficulty of getting at the real truth on the subject of certification He agreed that the difference in certification for sickness benefit could not all be attributed to malingering, but that, nevertheless, some must be attributed to it. He did not like the use of the word "malingering" or the phrase "false certification," because such words led them astray. The great majority of people did not deliberately break the law or cheat, but they were human, and the result was that, on the one hand, they naturally took benefits as they came to them in the ordinary kind of way, while, on the other hand, the doctor signed certificates as a matter of course, not meaning to deceive anyone or to betray anything, but in the hurry of his ordinary practice. The medical profession were probably the most unbusinesslike people in the world in their general practice, because their work had a compelling human appeal that they could not be businesslike in their ordinary arrangements. Even when doctors had time to be businesslike, they suffered from never having learned the habit of being businesslike. It was natural for them to do what they could for their patients, and to do what their patients wished them to do; and it was natural that if the patient came to his doctor and said, "Sign me again, doctor," he signed. He (Colonel Fremantle) agreed that the doctor was not fulfilling his contract under the insurance system, and that an insurance system would break down if that practice were followed generally. He was only saying that it was a natural tendency, and the reason why it involved going against the rules was that the whole national health insurance system was against the rules. When they had anything systematised they were bound to have difficulties.

SOUNDNESS OF THE SCHEME : SIGNS OF IMPROVEMENT

They had to keep the insurance system watertight and financially sound if it was not to break down, and to see that the systems of public health and public assistance should be improved wherever possible. The question, said Dr. Fremantle, was in what way they could make it sound. The figures showed an increase in certification up to 1927, but he was rather surprised that the Minister had not also remarked that the figures since then showed a definite improvement. He rather left the impression that there had been this constant increase in certification for sickness and disablement benefit among women.

As a matter of fact, in the last three years there had been a considerable improvement. Disablement and sickness were practically stationary at a level slightly above that reached in 1927 for unmarried women, while those for married women had substantially increased. The Minister was banking on having a 10 per cent. improvement during the next few years. The figures for the last three years of the Hearts of Oak Society, with which he was proud to be sociated in the work of honorary arbitrator, certainly d not show that there was likely to be a 10 per cent. iprovement. There had been an improvement on some rs, but on others it was very slight. The figures for omen's sickness in 1930 were £70 benefit per 100 members, id in 1931 £60. Disablement benefit was reduced for all omen from £52 to £49, with different figures for spinsters opposed to married women. Married women were very uch more. There was not very much reduction, and that duction really corresponded to the reduction in the scale benefits.

He was afraid that the 10 per cent. reduction on which ese estimates were framed would not be sufficient, and at was why he hoped they might be able to get support r the amendment which had been adumbrated by Mr. l-wellyn-Jones. It was a natural, reasonable, and right iggestion, in accordance with the hon. Member's diagnosis the trouble. Women, when they were married, tried, herever they could, to retain benefit so long as they mained in the same class. The suggestion in the amendment was that they should go into a separate class—lass K—until they were definitely disabled, and then they ould go back to Class E and get their benefit. That was human, natural way of meeting the point, and they would et by it a further reduction in sickness and disablement ithout any real hardship.

PROLONGATION OF BENEFIT.

Dr. Fremantle said he had been asked also to upport an amendment put forward by the National ssociation of Insurance Committees to prolong nedical benefit along with the prolongation of pension ights. Obviously they would all wish to see that f possible, but it depended on finance. He undertood from his society that it would not be practicable o make that further concession of medical benefit or another two years, but he hoped that the matter would be properly looked into, and that they would consider it in committee. If in any sense the Bill reduced benefits it must be an unpopular thing to do, but if it was right they ought not to hesitate. They would gain credit and confidence for the National Government if they helped to make the scheme sound. So much depended on this because the health of the people depended on it. The whole system was badly conceived and largely politically conceived, and there was a great deal wrong in it. It was more directed to benefit than to treatment and prevention of sickness. It had failed a great deal from that point of view, but they had to make the most of it, and they had made a great deal of it. There was a great deal of good in it which could be preserved and enlarged. It was not true that the health of the people was deteriorating. It was extraordinary how the health of the people had been improving in spite of all the difficulties of the past few years, and they had to see that that improvement and the benefits continued. They could only do so if sound financial lines were adhered to.

A QUESTION OF COMPLAISANCE.

Sir H. CAUTLEY asked if there was any information in the possession of the Ministry of Health showing the effect of paying benefit for the first three days. One heard rumours and stories of how members of approved societies in town wished to take a holiday, a long week-end of four or five days, and that a complaisant doctor did not take very much trouble, and the members went on benefit for those week-ends. He wondered whether that benefit, which he had always mistrusted, had not been abused and if there had not been laxity in this administration.

Dr. O'DONOVAN said that this was a matter of interest to the medical profession. He asked Sir H. Cautley to translate the stories of what he heard into how he heard them and from whom. The medical profession, he said, would then be greatly obliged to the hon. Member.

Sir H. CAUTLEY said that he only heard it. Numbers of people told him so, but otherwise he was not prepared to justify it. He was asking for information, and whether there were any statistics on the subject. He also asked if it would not be advisable to alter the system of the relationship of the panel doctor and his insured patients. At present no notice had to be given of any change of doctor. Could a doctor be more secured in his position by two, three, or four months' notice being required from a patient before he could change his doctor? At present the doctor was put in the position that if he refused to sign a certificate that a panel patient was ill, the patient might, in the heat of the moment, apply for a change in his medical attendant. While he did not suggest that the doctor did not try to do his best in a very difficult situation, he said that it was not fair to him, and that he ought not to be placed in that position.

A DEGRADING POSITION.

Mr. MACQUISTEN said that there was no more unpopular Act amongst the masses of the people than the National Health Insurance Act. The vast mass of doctors had been reduced from a profession to becoming tax collectors, a brotherhood of Zaccheus. They did nothing but collect and fill up forms and were insulted by committees of laymen, and surcharged if they gave patients medicines which were a little expensive. The medical profession had been largely degraded by the position into which its members had been put by this abominable Act. *A different breed of men had come into the profession*, and doctors themselves, or most of them, would tell them how they detested it.

A doctor friend of his in Edinburgh told him that he was getting £1500 a year for a few working men waiting in his consulting room in the evenings. He said that he got £75 a quarter from people who were too indignant to nominate a doctor and whom he therefore did not attend, and he felt as if he were getting money under false pretences. He (Mr. Macquisten) asked why he did not "chuck it," and his reply was that if he did so some other fellow would get it; that it helped to pay for his car and household expenses, and enabled him to build up a West End practice on the backs of the poor. It was all nonsense to talk about the Act protecting the people's health. Dr. O'Donovan had asked Sir H. Cautley to give instances in regard to his references to the medical profession. He (Mr. Macquisten) would give instances. To begin with, a substantial percentage of doctors practically wiped their boots on the panel patients when it was impossible for the patient to change his doctor. When the patients got some liberty and the chance of changing their doctor, there was the inevitable result of competition for patients. He did not blame the doctors. They were only human beings, and if he were put in the position of having to compete with other doctors to get 10*s.* a year each from several thousand people he would naturally look after himself, though he might curse the Government which had put him in that position.

LAX CERTIFICATION.

Mr. A. GREENWOOD said that it was difficult to ascribe reasons for the increase in the claims among married women, but he was satisfied that the long drawn out trade depression was one of the most important. While he did not suggest that the doctors were acting dishonestly or that married women were trying improperly to obtain benefits under the National Health Insurance scheme, it was undoubtedly true that there were cases of lax certification by doctors and a desire on the part of insured persons to get something to which they were not entitled. It was not fair to reduce the disablement benefit of the single women. If the nation were really hard pressed he would not complain of a reduction of benefits all round, but the trouble was that they were not all poor together, and it was a little mean to filch half-a-crown from the pockets of married women, honest industrial workers, in a time of sickness.

The Parliamentary Secretary Intervenes.

Mr. ERNEST BROWN (Parliamentary Secretary to the Ministry of Health) said that solvency was not an abstraction but an essential condition of paying not only the proposed benefits, but any benefits at all. In making the proposed changes the Government had had to do it so as best to guard the pension rights of these poor people as far as possible, consistently with a sound scheme. Colonel Fremantle and other Members had raised the question of a special class for married women. That was a case which could be presented during the Committee stage of the Bill, when everything for and against the proposal would be heard with great care by the Minister of Health. Everyone knew that the most subtle and difficult of all approved societies' problems was the decision as to when a married woman was or was not sick. It was not only a difficulty for the doctor, but for the approved society. Even in the smaller towns, where everyone's movements were known, it was very difficult to decide whether there was laxity or not in regard to certification of married women. It was certain that the actuarial risk in the case of married women under an insurance scheme was out of all proportion to the risk in the case of men or of single women. Because that risk had assumed such great proportions, the Minister of Health had felt it right to face the problem in the way which he had done, and to say, regretfully, that the only thing to be done was to tackle the question of what was the risk, in terms of the solvency of the scheme, in the case of married women.

AN ANTIDOTE.

Dr. O'DONOVAN said he had heard a most corrosive contribution to the debate, and if taken seriously it might lead administrators into difficulties and politicians into trouble, and lead to the use of the medical profession as the goat of Israel, so that they might tie their sires upon its horns and push it into the wilderness. They had heard from Mr. Macquisten that doctors accepted their money as if that money were obtained under false pretences. It was no help to clear thought or any aid to debate that a profession should have attached to it so criminal a label and so vile a libel. They were told on the authority of Mr. Macquisten that a new breed of men had come into the medical profession. He would assure the House that those who were entering the medical profession proceeded to the ancient universities where they studied athletics and the humane arts, and they then entered the hospitals to be taught the same traditions of medicine as existed before the National Insurance Act was ever thought of.

He was troubled, said Dr. O'Donovan, to think that it should be thought in the House of Commons that a member of the medical profession ought to be perfectly content to maintain his family on a salary of £300 a year; that he should live until death called him in a miasma of disease and in the midst of the direst poverty on such a sum; and that, on the other hand, if he took service under the panel, and received £1500 a year, he ought to be troubled in his conscience and refuse to work. It had been a blessing to the profession that thanks to the National Health Insurance Act doctors could now bring up their sons to that profession which they loved, and hand on from father to son the great tradition of service. He submitted that the Insurance Act had brought into the profession a wider selection of keen minds anxious to maintain the public health. The Act had worked well because it had received the coöperation of an intelligent and learned profession. Acting through the British Medical Association the medical profession had worked cordially with Governments of all colours for the people's health, and because of that coöperation the points of this Act had been good. The British Medical Association would celebrate the centenary of its foundation this year in London under the presidency of Lord Dawson, and hours would be devoted by the keenest minds to the discussion of public health problems.

Members of the medical profession, Dr. O'Donovan continued, had been drawn into public life because through the Insurance Act they had been interested in public health administration. They had not segregated themselves entirely in the atmosphere of the sick-room. Owing to this Act, which had been so much derided, our medical research through the medium of the Medical Research Council had been placed on a footing which was the admiration of Europe. Through that they had been able, with the coöperation of the large voluntary hospitals, to bring every modern device of science and the help of specialists to the home of every one of His Majesty's subjects. He apologised for delaying the House, but a corrosive acid should have some antidote. (Cheers.)

MOTION FOR REJECTION LOST.

The motion for the rejection of the Bill was rejected by 245 votes to 43, and the measure was then read a second time.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 7TH, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 68 (last week 62); scarlet fever, 1494; diphtheria, 708; enteric fever, 35; acute pneumonia (primary or influenzal), 1033; puerperal fever, 58; cerebro-spinal fever, 63; acute poliomyelitis, 5; acute polio-encephalitis, 3; encephalitis lethargica, 11; dysentery, 24; ophthalmia neonatorum, 108. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 10th–11th was as follows: Small-pox, 109 under treatment, 6 under observation (last week 106 and 2 respectively); scarlet fever, 1508; diphtheria, 1334; enteric fever, 8; measles, 2615; whooping-cough, 428; puerperal fever, 15 (plus 3 babies); encephalitis lethargica, 226; poliomyelitis, 4; "other diseases," 90. At St. Margaret's Hospital there were 14 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox or enteric fever, 87 (41) from measles, 5 (3) from scarlet fever, 49 (11) from whooping-cough, 26 (7) from diphtheria, 48 (17) from diarrhœa and enteritis under two years, and 36 (5) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 10 deaths from measles, Derby 5, Walthamstow and Manchester each 3. Birmingham reported 5 deaths from whooping-cough, Manchester 4, and Liverpool 3. Three fatal cases of diphtheria were reported at Tottenham and at Hull.

The number of stillbirths notified during the week was 316 (corresponding to a rate of 45 per 1000 births), including 56 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. S. W. Grimwade is placed on the retd. list at his own request with rank of Surg. Capt.

Surg. Lt.-Comdr. T. C. H. Neil to *Ceres*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. G. B. F. Churchill, having attained the age for compulsory retirement, is placed on retd. pay.

J. W. A. MacIver to be Lt. (on prob.).

ARMY DENTAL CORPS.

Lt. W. G. Martin to be Capt.

TERRITORIAL ARMY.

Capt. G. Bailey resigns his commn. and retains his rank with permission to wear the prescribed uniform.

Capts. P. Mumford and K. V. Bailey resign their commns.

Lt. W. A. Ball to be Capt.

Lt. R. Jackson resigns his commn.

INDIAN MEDICAL SERVICE.

The undermentioned Capts. (prov.) (on prob.) are confirmed in their rank: Capts. (on prob.) R. R. Bakhshi, D. C. Chopra, and M. Jafar.

CORRESPONDENCE

APPENDICITIS.

To the Editor of THE LANCET.

SIR,—I have read with great appreciation the lecture of my old friend. Sir James Berry, on "Fallen dols." Making all allowance for inaccuracy of old mpressions and for defaults of memory there can, think. be little doubt that appendicitis is far more requently seen in hospital wards than "perityphlitis" ever was. I can recall a few cases. seen in student days. of abscess in the right iliac fossa which pointed, or of abscess in the pelvis which emptied through the rectum. I clearly remember cases of general peritonitis which on the post-mortem table showed phacelation and rupture of the appendix; and I recall that "Wilks and Moxon" described similar conditions. I hold firmly to the opinion. which I have endeavoured to express to generations of medical students, that "no one should ever die of appendicitis," and I have also affirmed with equal truth and emphasis that deaths in this disease are too often "therapeutic"—caused, that is, by active measures designed for relief.

In olden days all cases which would now be classed as "appendicitis" were treated. in medical wards of course. by starvation and by administration of calomel and opium, one-quarter grain of each every four hours. When abdominal surgery first entered upon its startling career, that great pioneer. Lawson Tait, advocated with characteristic vigour the aperient treatment of the peritonitis that not seldom followed operation. Surgeons everywhere were encouraged to give, and often to repeat. large doses of purgatives of the most active and turbulent character. When, therefore, abdominal distension and intestinal paresis were observed in cases of "perityphlitis." which Reginald Fitz was teaching us to call "appendicitis." surgeons turned with enthusiasm, and with disastrous consequences, to purgatives to bring relief. From that custom, almost alone, the whole prospect *before* patients has undergone a bitter change. Harvey Cushing showed long ago that the cæcum, terminal ileum, and lowest part of ascending colon. have the highest bacterial content; and that micro-organisms therein are possessed of greatest virulence. One effect of aperients is to increase secretion; another, to arouse greatly strengthened muscular contraction. If the lumen of the appendix is blocked, and if the obstructive agent cannot be expelled by the agitation caused by purgatives, perforation will occur and the material extravasated into the peritoneum will then be of most infective power. I can hardly expect it to be credited, but it is nevertheless true, that for over twenty years I have not operated upon one single case of perforation (I exclude gangrene without perforation) in which an aperient had not been given. The philocathartic propensities of mothers and grandmothers (especially grandmothers!) lead them to administer castor oil or some equally active purgative to children who complain of "stomach ache." The most precious rule of all is, however, *avoid aperients*. Were this rule observed we should rarely see "therapeutic peritonitis" in children.

My view of treatment in cases of appendicitis may therefore be briefly and categorically stated :—

(1) Early operation in all cases is the best; by "early" is meant within four or six hours of the onset of the invariable inaugural symptom pain.

(2) If an aperient has been given operation at the earliest possible moment is imperative. Whatever risks are then taken will almost certainly be less than the risks of delay. The patient's condition may dictate a simple swift procedure, and a local anæsthetic. "Get in quick, get out quicker," as J. B. Murphy taught.

(3) If no aperient has been given. starvation, opium, absolute rest may enable a deliberate leisurely choice to be taken, in favour either of operation or of delay until resolution or suppuration occur. Such suppuration will always be local. and vent may be given by abdominal incision over the centre of the abscess, or by incision made in a few seconds into an abscess presenting in the vagina or protruding into the rectum. Such low openings lead to quicker healing than any others; and when. two weeks later, the appendix is removed, the surgeon will be surprised to find how little evidence remains of suppuration.

Ruthless operation with large incisions and a mind set upon removal of the appendix when an abscess is opened are, I cordially agree with Sir James Berry, entirely out of place. May I thank him for a most timely and sagacious contribution to a subject in regard to which wisdom has not yet descended upon us all? I am, Sir, yours faithfully,

Leeds, May 14th, 1932. MOYNIHAN.

To the Editor of THE LANCET.

SIR,—I have examined the statistics of the cases of appendicitis which have been under the care of the staff in St. Thomas's Hospital since the year 1869. The result is very striking, more especially when we consider that in many instances several of those who came for hospital treatment had been under care by general practitioners for one or perhaps five previous attacks. As the numbers of this disease treated at St. Thomas's are equalled or possibly surpassed by those admitted to other London hospitals, whilst private nursing homes are seldom without cases of operation for this disease, it has been considered advisable to approach THE LANCET to suggest an inquiry into the causation of appendicitis and its spread in recent years.

It is an investigation which cannot be carried out by private individuals, and we have thought that THE LANCET, with its record of help to the profession (during past years), would most efficiently carry out such investigation to a successful result. I am permitted to add the names of Sir Percy Sargent, senior surgeon to St. Thomas's, and Dr. A. E. Russell, consulting physician. St. Thomas's, in this suggestion.

I am, Sir, yours faithfully,

W. H. BATTLE,
Consulting Surgeon, St. Thomas's.
Harley-street, W., May 11th, 1932.

To the Editor of THE LANCET.

SIR,—In his address to the Medical Society of London Sir James Berry has revived an old controversy which most surgeons had considered settled. During the period that Sir James was surgical registrar at St. Bartholomew's I was house surgeon to Mr. Howard Marsh and his junior. Mr. Bowlby (as he then was). and can claim to have been brought up in the conservative school, better styled perhaps. the school of "delayed action." In those days it frequently happened that appendix cases were not admitted until a swelling had called attention to the necessity for surgical treatment. The acute fulminating cases were too often labelled as peritonitis, and failed to reach hospital in the operable stage, or if they did, often failed to survive. The statistics *which Sir James gives of a series of cases admitted* to the medical wards give no true picture of the mortality of appendicitis at that time.

The expectant policy which Sir James advocates in cases which have become localised and are developing an abscess is a policy of safety which was very commonly adopted in those days, and is perhaps not followed as often as it should be at the present time. I am in agreement with him with regard to the dangers of feeding, purgatives, &c., when an expectant policy is being adopted, and also as to the risks of approaching an inflammatory mass via the peritoneal cavity. I cannot, however, help feeling that Sir James in his address has lost sight of the very important fact that there are two distinct types of the acute appendix.

(1) There is the acute inflammatory (non-obstructive) type which is ushered in with malaise, rise of temperature, tenderness, and pain which is ultimately localised to the appendix region. Many of these cases subside under appropriate expectant treatment although, if diagnosed and operated on early, they run on the whole less risk than by expectant treatment. The best policy to adopt in this type of case is a matter of opinion, and each case must be judged on its merits.

(2) The other type is the acute obstructive (or mechanical) appendix, which has an entirely different onset, with sudden severe pain and vomiting which continues unless spontaneous relief occurs. In these cases there is seldom any warning, and no initial malaise or inflammatory signs. It is these cases, where a stercolith occludes the lumen, which fulminate rapidly, unless spontaneous relief occurs, and end *in gangrene and perforation. When perforation* occurs there is often sudden relief of both pain and distress and a short quiescent period results which may be most misleading, until the signs of peritonitis develop. The absence of inflammatory signs and the sudden cessation of acute symptoms sometimes give rise to a faulty diagnosis of intestinal colic. To delay operation in this type an hour longer than is absolutely necessary is to run a very grave risk. To deliberately adopt a waiting policy when an obstruction has been diagnosed is to invite perforation and disaster, and a policy such as this must be responsible for many deaths.

Prof. D. P. D. Wilkie, not long since, called attention in the medical press to the importance of recognising these two types, and for many years I have taught students the importance of distinguishing between these two classes and the urgent necessity for prompt treatment in the obstructive cases. It is true that after the first 24 hours or so the two types often cannot be distinguished, because inflammatory signs are added to the obstructive, but it is in the first 24 hours that the great risk of perforation and general peritonitis occurs, which can and should be avoided if diagnosis is sound and the urgency realised.

I venture to think that Sir James Berry, by omitting to refer to this type of case, may mislead many, and in so doing be responsible for more lives being lost than might be saved by following his precepts in other types of appendix inflammation.

I am, Sir, yours faithfully,

London, W., May 16th, 1932. C. GORDON-WATSON.

QUININE IN THE MÉNIÈRE SYNDROME.

To the Editor of THE LANCET.

SIR,—In a paper on the treatment of the Ménière syndrome (THE LANCET, Feb. 6th, p. 285) Mr. Keen *makes the statement that* "quinine should be avoided." I am convinced that if this advice is strictly followed out a great deal of relief will be withheld from many sufferers. The administration of such small doses as gr. ½–1, two or three times a day, has often produced the most gratifying effect. At the West End Hospital for Nervous Diseases my colleagues referred to me cases presenting the Ménière symptoms, and in a consecutive series of 48, the effect of small doses of quinine was tested. In 12 no report was obtainable, and of the remaining 36, there was in 28 well-marked and in 2 doubtful, improvement, while in 6 there was none. In these 6, the diagnoses were climacteric congestion of the labyrinth, hysteria, labyrinthine congestion, doubtful labyrinthine effusion, intense neurasthenia, indefinable vertigo. They were, therefore, not clear-cut *cases.*

The other cases presented the ordinary features of a damaging lesion of the labyrinth of one side, and the vertigo depended mainly on the asymmetrical action of the two labyrinths. The beneficial effect was probably due to the sedative action of the quinine on the sound one. In such cases the administration of quinine in small doses sufficient to quiet the equilibrial labyrinth without materially affecting the hearing is very efficacious, even if it only breaks the vicious circle and removes the apprehension of further attacks until "compensatory" equilibrium is restored. That the beneficial result was really due to the quinine was proved by the fact that the substitution of quassia for quinine in a number of cases was followed by recurrence of the vertigo which subsided when quinine was again administered.

My favourable opinion of the value of this treatment is endorsed by Prof. Albert Ramsbottom (THE LANCET, 1924, ii., 1191), who writes as follows: "On the whole, however, I believe that quinine in small doses with or without bromide will be found to be the most valuable drug in warding off attacks of vertigo of this class," viz., a non-suppurative lesion in the labyrinth. He prescribed it as follows: Quin. sulph. gr. ½, acid. hydrobrom. dil., ♏ xv., tinct. aurantii, ♏ xx., aq. ad ½ oz. I am sure it will be found useful in genuine cases.

I am, Sir, yours faithfully,

London, May 10th, 1932. JAMES DUNDAS-GRANT.

"EXCESSIVE SURGERY."

To the Editor of THE LANCET.

SIR,—In your issue of May 14th (p. 1047) Mr. F. M. Loughnane is reported *to have said in a* discussion on excessive surgery that "Hurst admitted that 20 per cent. of chronic gastric ulcer cases died of carcinoma." I have never made any such gross travesty of the truth. I have no figures of my own but I have often quoted Prof. M. J. Stewart's very accurate investigations which showed that among 180 chronic gastric ulcers removed at operation and specially studied from this point of view 11, or 6·1 per cent., showed evidence of becoming malignant. As only the more severe cases of ulcer, in which medical treatment has failed, are likely to come to operation, the percentage undergoing malignant degeneration is probably much less than this.

Mr. Loughnane added that "laparotomy did no larm and made it possible to prevent the onset of arcinoma.” The second statement is no doubt rue if partial gastrectomy is performed, but with in *average* mortality of at least 10 per cent. and with the definite (though now preventable) risk of severe achlorhydric anæmia developing as a sequel to the operation the first statement cannot be accepted. My own experience is that with very few exceptions gastric ulcers heal completely with adequate medical treatment, and Stewart has shown that the risk of carcinoma developing in the cicatrix is negligible.

In the rare cases of failure with medical treatment I have no hesitation in advising a gastrectomy sufficiently extensive to produce complete achlorhydria, but all palliative operations such as gastro-jejunostomy and jejunostomy have no advantage whatever over medical treatment and do not remove the small risk of malignant degeneration in the future.

I am, Sir, yours faithfully,

May 16th, 1932. ARTHUR F. HURST.

TRAINING IN TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I notice that so far there has been no reply to the chief points of Dr. Davidson's admirable letter in your issue of April 30th (p. 954). I am writing because my work for the last 12 years as physician in charge of the tuberculosis department at St. Thomas's Hospital, which includes the teaching of students, has led me to form very decided views on the problems of how students should be taught and what they should know.

1. How should students be taught? Dr. Davidson favours a compulsory course, just as specialists in the numerous special departments ask for a compulsory course in their particular subject. The department at St. Thomas's is self-contained. It includes an out-patient department, a borough dispensary, a tuberculosis ward, and a lady almoner's and after-care section; and in addition there are facilities for all the special investigations afforded by a general hospital. In my opinion, a student can obtain at least a satisfactory knowledge of the subject if he spends one morning a week in the out-patient room and one in the ward, over a period of three months. I regard it as essential that the numbers of students should be limited to four in the out-patient room and to 16 at the visit to the ward. The limitation in the out-patient room is important, not only from the point of view of the patients, but especially from that of the students. Each student needs individual attention, and the teaching on any particular case must be adapted to the capacity of the student concerned. What may be a useful and illuminating suggestion to a clever student often produces a dangerous perversion of the truth in the mind of one less gifted. So I try to keep the out-patient classes small, and as far as possible I grade them according to capacity. It follows that I cannot teach more than 64 students a year as I think they should be taught, yet the department is not a small one, for the new cases average 2000 a year and there is work for two whole-time medical officers. If the course were made compulsory the scope of the department would have to be increased, and I might not get the interest and attention which are usually shown by the volunteer.

2. What should students know? In the ward they should learn the general clinical aspect and the modern methods of diagnosis and treatment, from a systematic course of clinical lectures. But they need something more practical as well. The majority of students become general practitioners, and they will then require to know: (1) what cases to suspect; (2) how to make use of the local tuberculosis scheme; (3) how to treat complications; (4) how to recognise recrudescence of activity; (5) how the limitations imposed by treatment and by the disease itself will affect the patient in his work and environment; (6) what can be done to prevent spread of the disease. I maintain that subjects such as these should be taught in a dispensary.

At St. Thomas's eight whole-time clinical assistants each year receive special training, but organised post-graduate teaching is not undertaken, and therefore I am not qualified to discuss it. It is, however, a question which must be taken into account when training in tuberculosis is under review.

In conclusion, I would plead that for adequate instruction in tuberculosis a carefully organised department, including a tuberculosis dispensary, and a systematic and practical course of teaching are both essential elements, especially if that instruction is compulsory.—I am, Sir, yours faithfully,

G. T. HEBERT, M.D., F.R.C.P.

Harley-street, W., May 12th, 1932.

To the Editor of THE LANCET.

SIR,—I note with satisfaction the comments of the secretary of the University of Aberdeen on my letter in your issue of April 30th. My statements were based on a communication sent to me by the Joint Tuberculosis Council containing a digest of information supplied to that council by the deans or secretaries of various medical schools. From this it was by no means clear either that the training in tuberculosis at Aberdeen was compulsory for the M.B. degree, or that any definite coöperation existed between the municipal authorities and the university. In view of the admiration I have always felt for the clinical teaching at the Aberdeen School, I sincerely hope that my observations may not be misconstrued as intending any adverse criticism, and I am grateful to Mr. Butchart for pointing out this unintentional error on my part.

I am, Sir, yours faithfully,

MAURICE DAVIDSON.

Wimpole-street, W., May 13th, 1932.

CŒLIAC DISEASE AND DWARFISM.

To the Editor of THE LANCET.

SIR,—Dr. Vaughan and Dr. Hunter in their reply to my letter again ignore the carefully worded statement of our original article to the effect that the case had been considered to be renal only before our examination. I can only emphasise for the third time that we never at any time considered the cause to be renal.

This, however, is beside the point.

I may perhaps mention that at the time this investigation was carried out Dr. Hampson and myself were specially interested in sprue and cœliac disease, and were on the lookout for the evidence of either in all the cases of megalocytosis investigated by us. We were equally alive to the fact that the symptoms of cœliac disease might not be a prominent feature of the case. I can only repeat that the finding mentioned in our article of a “slight excess of soap crystals” in one single specimen of a series examined especially for their presence cannot be accepted as a finding in any way suggestive of cœliac admitted until a swelling had called attention to the necessity for surgical treatment. The acute fulminating cases were too often labelled as peritonitis, and failed to reach hospital in the operable stage, or if they did, often failed to survive. The statistics which Sir James gives of a series of cases admitted to the medical wards give no true picture of the mortality of appendicitis at that time.

The expectant policy which Sir James advocates in cases which have become localised and are developing an abscess is a policy of safety which was very commonly adopted in those days, and is perhaps not followed as often as it should be at the present time. I am in agreement with him with regard to the dangers of feeding, purgatives, &c., when an expectant policy is being adopted, and also as to the risks of approaching an inflammatory mass via the peritoneal cavity. I cannot, however, help feeling that Sir James in his address has lost sight of the very important fact that there are two distinct types of the acute appendix.

(1) There is the acute inflammatory (non-obstructive) type which is ushered in with malaise, rise of temperature, tenderness, and pain which is ultimately localised to the appendix region. Many of these cases subside under appropriate expectant treatment although, if diagnosed and operated on early, they run on the whole less risk than by expectant treatment. The best policy to adopt in this type of case is a matter of opinion, and each case must be judged on its merits.

(2) The other type is the acute obstructive (or mechanical) appendix, which has an entirely different onset, with sudden severe pain and vomiting which continues unless spontaneous relief occurs. In these cases there is seldom any warning, and no initial malaise or inflammatory signs. It is these cases, where a stercolith occludes the lumen, which fulminate rapidly, unless spontaneous relief occurs, and end in gangrene and perforation. When perforation occurs there is often sudden relief of both pain and distress and a short quiescent period results which may be most misleading, until the signs of peritonitis develop. The absence of inflammatory signs and the sudden cessation of acute symptoms sometimes give rise to a faulty diagnosis of intestinal colic. To delay operation in this type an hour longer than is absolutely necessary is to run a very grave risk. To deliberately adopt a waiting policy when an obstruction has been diagnosed is to invite perforation and disaster, and a policy such as this must be responsible for many deaths.

Prof. D. P. D. Wilkie, not long since, called attention in the medical press to the importance of recognising these two types, and for many years I have taught students the importance of distinguishing between these two classes and the urgent necessity for prompt treatment in the obstructive cases. It is true that after the first 24 hours or so the two types often cannot be distinguished, because inflammatory signs are added to the obstructive, but it is in the first 24 hours that the great risk of perforation and general peritonitis occurs, which can and should be avoided if diagnosis is sound and the urgency realised.

I venture to think that Sir James Berry, by omitting to refer to this type of case, may mislead many, and in so doing be responsible for more lives being lost than might be saved by following his precepts in other types of appendix inflammation.

I am, Sir, yours faithfully,

London, W., May 16th, 1932. C. GORDON-WATSON.

QUININE IN THE MÉNIÈRE SYNDROME.

To the Editor of THE LANCET.

SIR,—In a paper on the treatment of the Ménière syndrome (THE LANCET, Feb. 6th, p. 285) Mr. Keen makes the statement that "quinine should be avoided." I am convinced that if this advice is strictly followed out a great deal of relief will be withheld from many sufferers. The administration of such small doses as gr. ½–1, two or three times a day, has often produced the most gratifying effect. At the West End Hospital for Nervous Diseases my colleagues referred to me cases presenting the Ménière symptoms, and in a consecutive series of 48, the effect of small doses of quinine was tested. In 12 no report was obtainable, and of the remaining 36, there was in 28 well-marked and in 2 doubtful, improvement, while in 6 there was none. In these 6, the diagnoses were climacteric congestion of the labyrinth, hysteria, labyrinthine congestion, doubtful labyrinthine effusion, intense neurasthenia, indefinable vertigo. They were, therefore, not clear-cut cases.

The other cases presented the ordinary features of a damaging lesion of the labyrinth of one side, and the vertigo depended mainly on the asymmetrical action of the two labyrinths. The beneficial effect was probably due to the sedative action of the quinine on the sound one. In such cases the administration of quinine in small doses sufficient to quiet the equilibrial labyrinth without materially affecting the hearing is very efficacious, even if it only breaks the vicious circle and removes the apprehension of further attacks until "compensatory" equilibrium is restored. That the beneficial result was really due to the quinine was proved by the fact that the substitution of quassia for quinine in a number of cases was followed by recurrence of the vertigo which subsided when quinine was again administered.

My favourable opinion of the value of this treatment is endorsed by Prof. Albert Ramsbottom (THE LANCET, 1924, ii., 1191), who writes as follows: "On the whole, however, I believe that quinine in small doses with or without bromide will be found to be the most valuable drug in warding off attacks of vertigo of this class," viz., a non-suppurative lesion in the labyrinth. He prescribed it as follows: Quin. sulph. gr. ½, acid. hydrobrom. dil., ♏ xv., tinct. aurantii, ♏ xx., aq. ad ½ oz. I am sure it will be found useful in genuine cases.

I am, Sir, yours faithfully,

London, May 10th, 1932. JAMES DUNDAS-GRANT.

"EXCESSIVE SURGERY."

To the Editor of THE LANCET.

SIR,—In your issue of May 14th (p. 1047) Mr. F. M. Loughnane is reported to have said in a discussion on excessive surgery that "Hurst admitted that 20 per cent. of chronic gastric ulcer cases died of carcinoma." I have never made any such gross travesty of the truth. I have no figures of my own but I have often quoted Prof. M. J. Stewart's very accurate investigations which showed that among 180 chronic gastric ulcers removed at operation and specially studied from this point of view 11, or 6·1 per cent., showed evidence of becoming malignant. As only the more severe cases of ulcer, in which medical treatment has failed, are likely to come to operation, the percentage undergoing malignant degeneration is probably much less than this.

Mr. Loughnane added that "laparotomy did no arm and made it possible to prevent the onset of carcinoma." The second statement is no doubt true if partial gastrectomy is performed, but with an *average* mortality of at least 10 per cent. and with the definite (though now preventable) risk of severe achlorhydric anæmia developing as a sequel to the operation the first statement cannot be accepted. My own experience is that with very few exceptions gastric ulcers heal completely with adequate medical treatment, and Stewart has shown that the risk of carcinoma developing in the cicatrix is negligible.

In the rare cases of failure with medical treatment I have no hesitation in advising a gastrectomy sufficiently extensive to produce complete achlorhydria, but all palliative operations such as gastro-jejunostomy and jejunostomy have no advantage whatever over medical treatment and do not remove the small risk of malignant degeneration in the future.

I am, Sir, yours faithfully,
ARTHUR F. HURST.
May 16th, 1932.

TRAINING IN TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I notice that so far there has been no reply to the chief points of Dr. Davidson's admirable letter in your issue of April 30th (p. 954). I am writing because my work for the last 12 years as physician in charge of the tuberculosis department at St. Thomas's Hospital, which includes the teaching of students, has led me to form very decided views on the problems of how students should be taught and what they should know.

1. How should students be taught? Dr. Davidson favours a compulsory course, just as specialists in the numerous special departments ask for a compulsory course in their particular subject. The department at St. Thomas's is self-contained. It includes an out-patient department, a borough dispensary, a tuberculosis ward, and a lady almoner's and after-care section; and in addition there are facilities for all the special investigations afforded by a general hospital. In my opinion, a student can obtain at least a satisfactory knowledge of the subject if he spends one morning a week in the out-patient room and one in the ward, over a period of three months. I regard it as essential that the numbers of students should be limited to four in the out-patient room and to 16 at the visit to the ward. The limitation in the out-patient room is important, not only from the point of view of the patients, but especially from that of the students. Each student needs individual attention, and the teaching on any particular case must be adapted to the capacity of the student concerned. What may be a useful and illuminating suggestion to a clever student often produces a dangerous perversion of the truth in the mind of one less gifted. So I try to keep the out-patient classes small, and as far as possible I grade them according to capacity. It follows that I cannot teach more than 64 students a year as I think they should be taught, yet the department is not a small one, for the new cases average 2000 a year and there is work for two whole-time medical officers. If the course were made compulsory the scope of the department would have to be increased, and I might not get the interest and attention which are usually shown by the volunteer.

2. What should students know? In the ward they should learn the general clinical aspect and the modern methods of diagnosis and treatment, from a systematic course of clinical lectures. But they need something more practical as well. The majority of students become general practitioners, and they will then require to know: (1) what cases to suspect; (2) how to make use of the local tuberculosis scheme; (3) how to treat complications; (4) how to recognise recrudescence of activity; (5) how the limitations imposed by treatment and by the disease itself will affect the patient in his work and environment; (6) what can be done to prevent spread of the disease. I maintain that subjects such as these should be taught in a dispensary.

At St. Thomas's eight whole-time clinical assistants each year receive special training, but organised post-graduate teaching is not undertaken, and therefore I am not qualified to discuss it. It is, however, a question which must be taken into account when training in tuberculosis is under review.

In conclusion, I would plead that for adequate instruction in tuberculosis a carefully organised department, including a tuberculosis dispensary, and a systematic and practical course of teaching are both essential elements, especially if that instruction is compulsory.—I am, Sir, yours faithfully,

G. T. HEBERT, M.D., F.R.C.P.
Harley-street, W., May 12th, 1932.

To the Editor of THE LANCET.

SIR,—I note with satisfaction the comments of the secretary of the University of Aberdeen on my letter in your issue of April 30th. My statements were based on a communication sent to me by the Joint Tuberculosis Council containing a digest of information supplied to that council by the deans or secretaries of various medical schools. From this it was by no means clear either that the training in tuberculosis at Aberdeen was compulsory for the M.B. degree, or that any definite coöperation existed between the municipal authorities and the university. In view of the admiration I have always felt for the clinical teaching at the Aberdeen School, I sincerely hope that my observations may not be misconstrued as intending any adverse criticism, and I am grateful to Mr. Butchart for pointing out this unintentional error on my part.

I am, Sir, yours faithfully,
MAURICE DAVIDSON.
Wimpole-street, W., May 13th, 1932.

CŒLIAC DISEASE AND DWARFISM.

To the Editor of THE LANCET.

SIR.—Dr. Vaughan and Dr. Hunter in their reply to my letter again ignore the carefully worded statement of our original article to the effect that the case had been considered to be renal only before our examination. I can only emphasise for the third time that we never at any time considered the cause to be renal.

This, however, is beside the point.

I may perhaps mention that at the time this investigation was carried out Dr. Hampson and myself were specially interested in sprue and cœliac disease, and were on the lookout for the evidence of either in all the cases of megalocytosis investigated by us. We were equally alive to the fact that the symptoms of cœliac disease might not be a prominent feature of the case. I can only repeat that the finding mentioned in our article of a "slight excess of soap crystals" in one single specimen of a series examined especially for their presence cannot be accepted as a finding in any way suggestive of cœliac disease—the more so as neither at that time nor at any previous time were the stools "pale and porridgy," as Drs. Vaughan and Hunter agree that they should have been. The patient and her parents were closely questioned on this point.

The reference to erythroblastic anæmia tends further to confuse the issue; the white cell count in the patient under discussion was *not* high, the total white count being 4800 per c.mm., with a differential count as follows: polymorphs, 50 per cent.; lymphocytes, 42 per cent.; hyaline cells, 6 per cent.; eosinophils, 2 per cent.; there were no abnormal white cells present.

Drs. Vaughan and Hunter must have notes on cases, as we have, in which megalocytosis has occurred in young children both with and without an increase in the white count, and in which repeated examinations of the stools have revealed no abnormalities; such cases occurring since the introduction of liver therapy have been cured by that treatment. Whether the white cells of young children respond in a similar manner to those of adults may be open to debate, but there is considerable evidence to the contrary—e.g., acholuric jaundice when it occurs in infancy and childhood may be associated with a white count which shows a large number of myelocytes with occasional myeloblasts, though this is not the case in adults.

Whether dwarfism can be due to the blood condition, or whether, as appears more probable in the light of more recent knowledge, both are related to a common cause must remain open to doubt, as practically all the recorded cases of Addisonian pernicious anæmia occurring in children to which Drs. Vaughan and Hunter have referred have died of the disease before obvious changes in growth could have occurred.

Considerations such as those raised by Drs. Vaughan and Hunter in their letter tend to obscure the point that the facts of the case offer no justification for its inclusion as a case of cœliac disease.

I am, Sir, yours faithfully,

Grosvenor-street, W., May 15th, 1932. J. W. SHACKLE.

UNDULANT FEVER.

To the Editor of THE LANCET.

SIR,—You may consider it profitable to add to reports of *abortus* fever in this country by publishing a record of four cases detected in this area of Lancashire between September, 1930, and April, 1932. In this laboratory, during that period, 60 sera have been searched for agglutinins against the enteric group. Six significant results have been obtained and confirmed clinically or by culture as typhoid or paratyphoid B fever. Forty-five of the above sera were searched for agglutinins against *Brucella abortus* and *melitensis*, using Oxford standard suspensions. Five positive results have been obtained, four significant, one insignificant. The average "reduced" titre of the significant results is 500, the insignificant figure being 12. The corresponding figures for the full titres are 1060 and 25. Of the significant results, two were suspected before the sera were obtained, two were unexpected in cases of unexplained fever. All four cases, when reviewed, conformed with *abortus* fever. One case was the child of a farmer, in whose herd of cows was infectious abortion. In no other case was there indication of the source of infection. In no case was obtained a positive culture.

I am, Sir, yours faithfully,

F. B. SMITH.

Pathological Laboratory, Royal Infirmary, Preston,
May 13th, 1932.

THE HEALTH OF HENRY VIII.

To the Editor of THE LANCET.

SIR,—In his interesting work upon Henry VIII., reviewed in your issue of May 14th (p. 1077), Mr. Chamberlin denies that the bluff king suffered from syphilis, thereby giving the lie direct to the late Dr. Maclaurin's conclusions set forth in his two books, "Post Mortem" and "Mere Mortals." Since Prof. Chamberlin is not himself a medical man, it may interest those of your readers who may be unacquainted with Dr. Maclaurin's books to learn the main points of the latter's arguments.

Dr. Maclaurin ("Post Mortem," p. 14), after pointing out that, following the return of Columbus's men, syphilis "ran like a whirlwind through Europe," sums up his evidence beforehand with the words: "It is impossible to doubt that Henry contracted it in his youth; the evidence will become clear to any doctor as we proceed." He mentions, en passant, the absurd charge made against Wolsey of giving the King syphilis by whispering in his ear and points out that the Cardinal had several healthy illegitimate children, adding, "On the whole it is possible that Henry caught the disease in the usual way."

In "Mere Mortals" (pp. 49–50), Dr. Maclaurin formulates his diagnostic reasons under six heads, which may be briefly summarised as follows: (1) The extraordinary number of premature births and dead children from two of his wives, one of whom was young and healthy. The issue by Katherine of Aragon was as follows: A stillbirth in 1510, Henry 1511 (lived six weeks), miscarriage 1513, premature male 1514, Mary 1516, two miscarriages 1517, and a stillborn son 1518. Anne Boleyn bore Elizabeth 1533 and a stillborn son 1536. (2) The poor health of at least three of his children, Mary, Edward VI., and the Duke of Richmond. To these I shall return later. (3) The terrible mental, moral, and physical degeneration which set in in Henry's early middle age. (4) The facts given in the *British Medical Journal* in 1910:—"From being an able and athletic man he had become a mass of loathsome infirmities. . . . His legs were swollen and covered with festering sores, causing an unbearable stench." (5) The sinus in his leg, which "seems to have been syphilitic periostitis occurring in an essentially neurotic man." (6) Death in stupor at the comparatively early age of 55. In detailing these points, Dr. Maclaurin wisely remarks, "Not any single one of these is indubitable evidence of syphilis, but taken altogether there is no other reasonable explanation," and he suggests that Henry's case may be one of those in *which lack of early treatment, combined with worry and overstrain, may* "go tragically wrong in the end."

Henry's unhealthy children present, perhaps, the most difficult problem. On the one hand we have Edward VI. who is stated to have died of consumption. It was, however, a consumption in which the boy's legs swelled, his complexion grew sallow, his hair fell out, and the terminal joints of his fingers fell off (suggestive of syphilitic dactylitis). Dr. Maclaurin, while hazarding a guess "that it was syphilis of the lung that killed him," plausibly suggests that, as in many other examples, it was a case in which the tuberculosis was complicated with congenital syphilis.

With regard to Mary, I remember how, when first I saw the portrait preserved in Winchester Cathedral, I was struck by its obvious resemblance to a case of congenital syphilis. Later I read somewhere, but cannot recall the source, that Philip of Spain complained of the disgusting odour from her nose. Naturally I was interested to find Dr. Maclaurin ("Mere Mortals," p. 81 ff.) drawing attention to the facts that she was a sickly child, suffered from severe headaches and defective vision (which Sir Clifford Allbutt suggested as possible interstitial keratitis). Mary died suddenly at 42, supposedly of ovarian tumour. Dr. Maclaurin remarks that "Any doctor looking at the portrait of her wizened, lined, and prematurely aged face would probably say 'That woman must have been a hereditary syphilitic,' especially if he knew the history of Henry VIII."

On the other hand, there are Elizabeth and the Duke of Richmond, in whom there certainly appears no evidence of syphilis. The latter, "Henry Fitzroy," was born in 1519, at the period in which Katherine of Aragon was having miscarriages and stillbirths, and when Henry was 18. Richmond was physically weak after the spring of 1536 and died of consumption July 23rd of that year, having suffered from hæmoptysis since Anne Boleyn's execution in May, the last occasion that he appeared in public. Both Henry Fitzroy and Elizabeth, born 1553, when Henry was 42, make the question of syphilis doubtful, but it is just possible that neither of them were the King's children. Into this it is, perhaps, best not to enter.

It may certainly be said, from the standpoint of the legal mind, that the question of Henry's syphilis is "non-proven," but, in the face of Dr. Maclaurin's arguments, backed up by his vast clinical experience on the subject, I do not think it can be summarily dismissed by a layman without protest.

I am, Sir, yours faithfully,
MACLEOD YEARSLEY.
Harley-street, W., May 16th, 1932.

THE GALL-BLADDER AND CARDIAC PAIN.

To the Editor of THE LANCET.

SIR,—Dr. C. H. Miller's paper in your issue of April 9th (p. 767) recalls to my mind a case which suggests a peculiar relationship between gall-bladder and heart. A sturdy hard-working man of 60 was seized one afternoon in his home with the excruciating pain characteristic of biliary colic—the first and only attack. The gall-bladder point was extremely tender on palpation. Morphia and atropine gave relief. To my surprise on putting my fingers on his pulse, this was totally irregular. Auscultation confirmed a complete arrhythmia. Digitalis was given. Twenty-four hours later normal rhythm had returned and remained. There was no detectable cardiac disease; vessel walls were somewhat thickened; blood pressure not elevated. The patient insisted on resuming his work a few days later, and during a period of three years following had no further trouble. I lost touch with him after that, but I believe he continues to enjoy robust health, four and a half years after this occurrence. In this case the biliary colic appears to have been directly responsible for the alarming disturbance of the heart's rhythm, but there was no cardiac pain.

I am, Sir, yours faithfully,
MALCOLM E. J. STALKER
Roquebrune, Cap Martin, France, May 3rd, 1932.

PUBLIC HEALTH INTELLIGENCE.

To the Editor of THE LANCET.

SIR,—May I through the courtesy of your columns bring to the notice of public health administrators the facilities that exist in the Health Organisation of the League of Nations for the supply of information relating to the detailed application of different public health methods in various countries. In addition, comparative information is available with regard to epidemiological statistics and public health legislation. The Health Organisation is willing to supply, as far as possible, data on the above branches of preventive medicine.

Inquiries are however limited to those from the heads of large administrations or the heads of scientific institutions, who should indicate the purpose for which the information is required, in view of the amount of work that unconsidered requests necessarily involve. Furthermore, inquiries should be limited to information that is not already in the medical press. All inquiries should be addressed to the Medical Director, Health Section, marked "Public Health Intelligence," League of Nations, Geneva, Switzerland.

I am, Sir, yours faithfully,
LUDWIK RAJCHMAN,
Medical Director, Health Section,
League of Nations.
Geneva, May 2nd, 1932.

CORRIGENDUM.—In Dr. Hernaman-Johnson's letter last week on the Treatment of Osteo-arthritis the word hyperthymic in line 8 should read *hypertrophic.*

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

Children and Young Persons Bill.

ON Thursday, May 12th, in the House of Commons the Children and Young Persons Bill was considered on Report and read the third time.

Whitsuntide Adjournment.

On Friday, May 13th, both Houses of Parliament adjourned for the Whitsuntide recess. The House of Commons will reassemble on Monday, May 23rd, and the House of Lords on Wednesday, May 25th.

HOUSE OF COMMONS.

WEDNESDAY, MAY 11TH.

Workmen's Compensation in the Colonies.

Mr. HICKS asked the Secretary for the Colonies what steps had been taken in British Colonies and Protectorates to give effect to the provisions of the conventions on workmen's compensation (accidents and diseases) and on sickness insurance, adopted at the seventh and tenth conferences of the International Labour Organisation.—Sir P. CUNLIFFE-LISTER replied: Three conventions relating to workmen's compensation were adopted at the seventh session of the International Labour Conference. Of these, the convention relating to workmen's compensation for accidents has not been ratified in respect of the United Kingdom. The question of applying this convention to the British Colonies and Protectorates, in accordance with the provisions of Article 421 of the Treaty of Versailles, does not therefore arise. The convention relating to equality of treatment for national and foreign workers in the matter of workmen's compensation has been substantially applied in the dependencies in which workmen's compensation legislation already exists, of which particulars were given in my reply to a question on March 9th. The convention relating to workmen's compensation for occupational diseases has been applied (with suitable local variations in the diseases covered) in Malta and (so far as non-native workmen are concerned) in Northern Rhodesia. The administration of compulsory sickness insurance schemes, as contemplated in the two conventions which were adopted at the tenth session of the International Labour Conference, is not at present practicable in the Colonies and Protectorates. In the majority of the dependencies, however, free medical and hospital treatment is provided either by the Government, or (in some dependencies under statute) by large employers of organised labour. In other words, certain of the objects of these conventions are to a great extent attained without any specific contributions from the persons who derive benefit from the facilities provided.

Prison Dietary.

Mr. RHYS DAVIES asked the Home Secretary in what prisons there had been complaints and disturbances about the quality of the food supplied to prisoners; and if he would send an officer of his department to inspect the food in all prisons under his control at intervals during the year.—Sir HERBERT SAMUEL replied: Special attention has of recent years been devoted to the improvement of prison dietaries, and to securing a proper standard of skill and care in their preparation. Officers of my department regularly inspect the food and the kitchens, which are also seen by the visiting justices on their visits. It would be impracticable to collect particulars of complaints made by individual prisoners about their food, but I am satisfied that there is no general cause for complaint as regards either the quality or the preparation. There has, apart from the events of January last at Dartmoor, been no disturbance at any prison, nor any general complaint arising from dissatisfaction with the food.

Suspected Small-pox on the "Tuscania."

Mr. GROVES asked the Minister of Health whether he could state the date the child supposed to be suffering from small-pox was landed at Suez from the s.s. *Tuscania;* the date his department was informed of this fact; the date it was ascertained at Suez that the disease was chicken-pox; the date the department was notified of the change in diagnosis; and whether this information was sent by wireless to the captain of the s.s. *Tuscania* from Suez or from his department.—Sir E. HILTON YOUNG replied: The child was landed at Suez on April 22nd. The notification was received in my department on the 23rd. The diagnosis of chicken-pox was made by the Suez Hospital authorities on the 25th. My department was informed of this diagnosis, in reply to an inquiry by telegraph, on the 30th. The revised diagnosis was not notified by my department to the master of the *Tuscania*, and I have no information whether it was so notified from Suez.

THURSDAY, MAY 12TH.

The Medical Stamp Duty.

Sir ALFRED BEIT asked the Chancellor of the Exchequer whether, in view of the decline in the yield of the stamp duties, he would now consider amending the Medicine Stamp Acts with the object of rendering all medicines protected by registered names or trade marks liable to duty, even if they were of a known, admitted, or proved nature.—Mr. CHAMBERLAIN (Chancellor of the Exchequer) replied: I do not think that my hon. friend's suggestion can be accepted, but I am having the present position under the Medicine Stamp Acts examined in order to see whether some amendment of those Acts is desirable.

Public Health Law Consolidation.

Mr. LIDDALL asked the Minister of Health when the Committee on Local-Government and Public Health Law Consolidation, appointed Dec. 8th, 1930, would present its report.—Sir E. HILTON YOUNG replied: I understand that this committee hopes to issue an interim report covering the consolidation of the law of local government by the end of the present year. I cannot, at present, state when its final report will be presented.

FRIDAY, MAY 13TH.

Poison Gas Experiments.

Sir ROBERT GOWER asked the Financial Secretary to the War Office what was the number of horses, dogs, and other animals respectively used for poison gas experiments at Porton, Cambridge, and elsewhere in Great Britain respectively during the years 1930, 1931, and the first four months of 1932 respectively.—Mr. DUFF COOPER replied: The number of horses, dogs, and other animals used for chemical defence experiments at the Chemical Defence Research Establishment, Porton, and the Physiological Laboratory, Cambridge, during the periods referred to was as follows:—

—	Physiological Laboratory, Cambridge.			Chemical Defence Research Establishment, Porton.		
	Dogs.	Horses.	Other animals.	Dogs.	Horses.	Other animals.
1930	—	—	85	—	8	711
1931	—	—	11	—	—	679
1932 (Jan.–April)	—	—	—	—	—	127

No other laboratories are concerned.

MEDICAL NEWS

University of Cambridge.

On May 13th the following degrees were conferred:—

M.D.—R. K. Debenham.

M.B. & B.Chir.—H. B. Padwick.

English Conjoint Examining Board.

At the final examination, held from April 4th to 27th, the following candidates were approved in the under-mentioned subjects, but are not yet eligible for diplomas.

Medicine.—F. C. Angier, Liverpool; J. D. H. Bird, King's Coll.; R. W. Blakey, Leeds; Ethel D. M. Brook, Royal Free; B. Cates, St. Bart.'s; P. K. Chanmugam, Ceylon and King's Coll.; E. M. Clark, St. Bart.'s; H. Cohen, Middlesex; T. A. Connold, St. Thomas's; H. G. N. Cooper, Oxford and Guy's; P. T. Cooper, Camb. and St. George's; C. F. Cumings, King's Coll.; A. L. Davies, Middlesex; L. S. De Silva, King's Coll.; L. W. B. Dobbin, Camb. and London; Phyllis M. Dobbs, Royal Free; F. R. Edwards, Liverpool; Helen M. Evans, Royal Free; R. C. Evans, Univ. College; W. J. M. Evans, Cardiff; F. E. Fletcher, Bristol; D. H. Fulton, King's Coll.; Getel Gimpelson, King's Coll.; Phyllis N. Greene, Royal Free; J. C. Hardy, Univ. College; W. Hunt, Camb. and St. Bart.'s; J. E. Jones, Liverpool; Katherine M. Jones, Royal Free; M. Katz, St. Bart.'s; B. S. Kaushal, Punjab and Middlesex; L. O'N. Knox, Guy's; Peggy Levi, Birmingham; S. Livni, London; Barbara R. Lockwood, Royal Free; J. L. Lovibond, Camb. and Middlesex; Monica Low, Royal Free; I. R. W. Merrick, King's Coll.; G. R. Morgan, St. Bart.'s; R. B. Munro, Univ. College; Elizabeth M. Ogden, King's Coll.; N. C. R. M. Perumal, Ceylon and West London; Joyce A. Pope, Manchester; L. E. J. Poulier, Ceylon and St. George's; J. F. P. Price, King's Coll.; T. G. Richards, Liverpool; R. H. Rushton, King's Coll.; B. F. B. Russell, St. Bart.'s; H. B. C. Sandiford, St. Thomas's; R. T. Shipman, St. Thomas's; F. Summers, King's Coll.; Enid A. Taylour, Bristol; Patricia I. Unsworth, Liverpool; C. U. Wickham, Birmingham.

Surgery.—T. Abdel Rahman, Royal Free; H. Ackers, Liverpool; R. M. Alford, St. Thomas's; N. Bakhru, Bombay and London; J. B. Bamford, St. Bart.'s; V. H. Barnett, Univ. College; C. G. Batty-Smith, Camb. and St. George's; G. T. Bevir, Bristol; S. E. Birdsall, Camb. and St. Bart.'s; A. Birnbaum, London; Marjorie Bolton, Royal Free; E. Braithwaite, Oxford and London; T. Bromberg, St. Mary's; D. G. W. Brown, Liverpool; W. Bullock, Liverpool; L. I. S. Campbell, Camb. and Guy's; W. M. Capper, St. Bart.'s; A. Carling, Oxford and St. Thomas's; A. C. Cox, Oxford and Guy's; S. M. Cruz, Birmingham; F. J. Curtis, Camb. and Guy's; Phyllis E. Dain, Birmingham; D. T. Davies, Cardiff and St. Bart.'s; D. J. Dawson, St. Bart.'s; M. E. Disney, London; M. H. Evans, Oxford and Middlesex; S. T. Falla, London; T. B. Field, Univ. College; R. J. K. Fleming, London; F. E. Fletcher, Bristol; Fanny C. Fraser, Royal Free; A. H. Galley, King's Coll.; T. H. Gardener, London; A. K. Guha, Manchester; M. A. F. A. Hadi, Birmingham; M. Hafezi, St. Mary's; H. G. Hanley, Liverpool; P. L. S. Hatton, St. Bart.'s; L. P. Hodgson, Birmingham; E. K. Hole, St. Bart.'s; Phyllis L. Holliday, Camb. and Leeds; H. D. Holt, Univ. College; J. S. Horsley, London; A. W. J. Houghton, St. Bart.'s; T. G. Hovenden, Oxford an

Middlesex; G. S. N. Hughes, St.

London; J. L. S. James, Bristol;

S. O. Jones, King's Coll.; H. B. D

Bart.'s; M. Klass, St. Mary's;

Guy's; A. Kobylivker, Guy's;

S. Levontin, London; R. S. Lewis

L. H. B. Light, Camb. and St. Thomas's; J. N. McA

Univ. College; J. D. Macleod, St. Thomas's; H. A. Magnus, St. Bart.'s; R. L. Mansi, St. Bart.'s; G. A. Miller, Camb. and Guy's; C. J. Morgan, St. Bart.'s; C. C. Morgans, Camb. and St. Thomas's; H. F. Moseley, Oxford and St. Thomas's; G. H. C. Ovens, St. Mary's; J. W. M. Owen, St. Mary's; R. W. Pickering, Guy's; W. S. Pitt-Payne, Guy's; G. A. Powell-Tuck, Birmingham; H. G. Rees, Middlesex; A. E. A. Ridgway, Charing Cross; T. J. Ryan, St. Bart.'s; A. G. Salaman, Camb. and London; F. W. Shepherd, Camb. and St. Bart.'s; J. Shields, Camb. and St. Bart.'s; V. C. Snell, Camb. and St. Bart.'s; E. J. Somerset, King's Coll.; W. H. C. Spooner, St. Mary's; W. G. Stanford, Guy's; J. E. Stephens, St. Thomas's; F. R. Store, Univ. College; K. W. Stroude, Liverpool; E. J. Stubbs, Guy's; M. M. Syddiq, Punjab; N. S. Taylor, King's Coll.; H. R. Thompson, Camb. and London; R. E. S. Turner, Oxford and St. Bart.'s; E. A. Webb, Guy's; R. F. Winckworth, St. Thomas's; K. E. L. Yuill, Birmingham.

Midwifery.—F. C. Abeyesekera, King's Coll.; H. Ackers, Liverpool; C. F. S. Aiken, Oxford and Middlesex; I. G. Anderson, King's Coll.; I. B. Asafu-Adjaye, Univ. College; H. J. B. Atkins, Oxford and Guy's; Margaret M. Baddeley, Royal Free; R. H. Bailey, Camb. and King's Coll.; Helen Baker, Royal Free; W. N. W. Barns, Univ. College; S. A. Bather, Oxford and Leeds; R. Bennett, Oxford and St. Bart.'s; J. G. Bentley, St. Bart.'s; J. H. Bentley, Camb. and Middlesex;

R. N. Bhatia, Camb. and St. Bart.'s; H.

S. E. Birdsall, Camb. and St. Bart.'s; A

A. Bowen-Davies, Camb. and Guy's; C.

D. G. W. Brown, Liverpool; T. J. K.

W. Bullock, Liverpool; H. W. Burge

Buxton, Camb. and St. George's; H. F.

H. K. Childs, St. Thomas's; C. A. Clarke, Camb. and Guy's; C. C. Cobb, Oxford and St. George's; J. C. Colbeck, Guy's; Gwendolen N. Cook, Royal Free; D. M. Cooper, St. Thomas's;

nna V. K. Cyriax, Univ. College; D. J. Dawson, St. Bart.'s; Doris A. Dean, Birmingham; A. K. Deb, Calcutta; C. J. D'Monte, Middlesex; E. J. Dennison, St. Thomas's: L. W. B. Dobbin, Camb. and London; A. G. Donald, Guy's; J. F. H. Eagles, Bristol; F. R. Edwards, Liverpool; Evelyn M. Eggleton, Univ. College; H. L. Ellis, Middlesex; Helen M. Evans, Royal Free; W. J. M. Evans, Cardiff; L. H. Evelyn, Guy's; T. B. Field, Univ. College; R. J. K. Fleming, London; Fanny C. Fraser, Royal Free; L. B. Furber, St. Bart.'s; D. W. Geidt, Oxford and Guy's; S. K. Ghosh, Middlesex; W. G. Gill, Camb. and Guy's; T. D. M. Gillies, St. Thomas's; G. P. Goodwin, Camb. and St Mary's; D. R. Gray, Camb. and Charing Cross; N. C. Griffin, Leeds; A. V. Griffiths, Cardiff; A. K. Guha, Manchester; G. L. Hardman, St. George's; K. W. Hardy, London; Freda M. B. Harmer, Royal Free; E. H. C. Harper, St. Thomas's; P. G. F. Harvey, St. Bart.'s; O. S. Heyns, Univ. College; H. M. Hodgkin, Camb. and Guy's; L. P. Hodgson, Birmingham; T. R. Hornby, Manchester; T. G. Hudson, St. Thomas's; D. M. Hughes, Cardiff; M. G. H. Hughes, London; T. P. E. Hughes, Oxford and Middlesex; W. H. Hughes, St. Mary's; Elizabeth M. Hutton, Royal Free; H. V. D'A. Iles, Guy's; Ursula Y. im Thurn, Univ. College; J. R. E. James, Cardiff and London; D. K. Jardine, St. Bart.'s; Ruby D. Johnson, Oxford and Univ. College; Katherine M. Jones, Royal Free; Nellie E. Jones, Cardiff; A. H. Knowles, Camb. and St. Thomas's; Hilda I. Lanceley, King's Coll.: C. B. Lanyon, Univ. College; M. Lee, St. Thomas's; Z. Lefkovitz, Cardiff; F. X. Letellier, Univ. College; B. S. Lewis, St. Bart.'s; L. A. Lewis, Cardiff; W. Lewis, Camb. and Guy's; W. L. Lister, St. Mary's; D. B. McGavin, Camb. and St. Bart.'s; J. C. McGregor, Charing Cross; B. M. McOwan, St. Bart.'s; G. A. Mais, St. Thomas's; Gwendolen E. Matthews, Westminster; R. F. Matthews, Middlesex; J. B. Mee, Birmingham; H. N. Miles, King's Coll.; R. J. G. Morrison, St. Bart.'s; H. Mower, St. George's; J. B. C. Murdoch, Camb. and Guy's; L. R. Norsworthy, St. Bart.'s; R. M. M. C. Orpwood, St. Bart.'s; E. D. Page, St. Mary's; R. Q. Parkes, Camb. and St. Thomas's; E. B. Pawson, Camb. and St. Bart.'s; R. V. Payne, Camb. and Guy's; C. J. P. Pearson, St. Thomas's; N. C. R. M. Perumal, Ceylon and West London; G. E. Phillips, Cardiff; G. Phipps, St. Thomas's; A. G. Potts, Guy's; A. U. Prodhan, Calcutta; R. G. Pulvertaft, Camb. and St. Thomas's; G. Ransome, St. Bart.'s; T. G. Richards, Liverpool; A. E. G. Ridgway, London; A. H. W. Roffey, King's Coll.; Constance M. Rostron, Manchester; N. S. Sablin, St. Bart.'s; C. A. J. Sampson, St. Thomas's; R. D. Scriven, Westminster; A. L. Secchi, St. Thomas's; S. S. Selladurai, Ceylon and Middlesex; S. K. Sen, Camb. and St. Bart.'s; F. M. Shaw, Royal Free; G. H. Shaw, Camb. and St. Thomas's; J. W. V. Sheldon, Guy's; S. C. Shore, Guy's; J. P. Singer, Camb. and Guy's; H. G. Stanton, St. Bart.'s; K. W. Stroude, Liverpool; E. J. Stubbs, Guy's; N. S. Taylor, King's Coll.; D. M. E. Thomas, St. Bart.'s; F. W. Thomas, Cardiff; R. W. H. Thomas, St. Mary's; W. E. Thomas, Cardiff; H. R. Thompson, Camb. and London; A. S. Thorley, Univ. College; H. A. Treble, Oxford and Guy's; T. M. Tyrrell, Camb. and St. Thomas's; Annie M. B. Walker, Bristol; E. O. Walker, Camb. and Bristol; G. L. Ward, Camb. and St. George's; C. J. T. Watson, Camb. and St. George's; G. C. Welply, St. Mary's; W. H. Whiles, King's Coll.; C. U. Wickham, Birmingham; Albertine L. Winner, Univ. College; H. R. I. Wolfe, St. Thomas's; C. W. B. Woodham, St. Bart.'s; A. R. Woodforde, St. Bart.'s.

Pathology.—T. Abdel-Rahman, Royal Free; Winifred L. Acraman, Cardiff; P. H. Addison, St. Mary's; W. O. Baird, Middlesex; J. B. Bamford, St. Bart.'s; R. Bennett, St. Bart.'s; J. G. Bentley, St. Bart.'s; R. N. Bhatia, St. Bart.'s; J. R. Blackburne, St. Bart.'s; G. W. Blomfield, Leeds; H. W. Burge, King's Coll.; S. J. Chesser, Camb. and St. Thomas's; E. L. Cohen, Camb. and St. Bart.'s; H. Cohen, Middlesex; Gwendolen N. Cook, Royal Free; S. W. Cooper, St. Mary's; F. E. Corea, St. Bart.'s; H. Creditor, Univ. College; A. R. Cutlack, St. Bart.'s; A. L. Davies, Middlesex; D. T. Davies, Cardiff and St. Bart.'s; J. Davies, Cardiff and London; E. Davis, Manchester; W. Dean, Westminster; A. G. Donald, Guy's; R. M. Ebeid, Birmingham; M. H. Evans, Oxford and Middlesex; L. H. Evelyn, Guy's; E. D. Falconer, Guy's; T. Fichardt, Guy's; J. Fishman, London; R. J. K. Fleming, London; J. L. Freer, Guy's; S. K. Ghosh, Middlesex; G. P. Goodwin, Camb. and St. Mary's; J. L. Hamilton-Paterson, Univ. College; K. W. Hardy, London; B. A. E. Harley, Middlesex; B. P. Harris, Camb. and Middlesex; P. G. F. Harvey, St. Bart.'s; E. K. Hole, St. Bart.'s; J. Holme, Manchester; H. D. Holt, Univ. College; R. A. Hooper, Camb. and St. Thomas's; J. Howkins, Middlesex; M. G. H. Hughes, London; W. H. Hughes, St. Mary's; Elizabeth M. Hutton, Royal Free; J. R. E. James, London; W. L. James, Guy's; A. G. Johnson, Guy's; Grace M. Jones, Cardiff; Nellie E. Jones, Cardiff: G. E. Kerr, King's Coll.; B. H. Kirman, King's Coll.; R. G. Knight, Camb. and Guy's; A. Kobylivker, Guy's; C. B. Lanyon, Univ. College; S. B. Lavine, Middlesex; J. B. Lee, Manchester; A. R. R. Le Fleming, Camb. and St. Thomas's; C. A. Lewis, Camb. and King's Coll.; Vida L. Liddell, Leeds; M. B. Lindsay, St. Thomas's; B. McArdle, Guy's; J. J. McCann, St. Thomas's; R. G. Macfarlane, St. Bart.'s; B. M. McOwan, St. Bart.'s; J. I. Maran, Univ. College; J. B. Maurice, Oxford and St. Mary's; F. S. A. Maw, Camb. and King's Coll.; C. R. Mayou, Birmingham; R. V. F. Mercer, Camb. and St. Bart.'s; H. N. Miles, King's Coll.; K. O. Milner, Leeds; F. C. Moll, Westminster; R. J. G. Morrison, St. Bart.'s; J. A. Nunn, Oxford and St. Bart.'s; Elizabeth M. Ogden, King's Coll.; T. G. Osler, St. Mary's; M. W. L. Owen, Camb. and St. Mary's; E. B. Pawson, Camb. and St. Bart.'s; G. E. Phillips, Cardiff; A. G. Potts, Guy's; F. J. P. Price, King's Coll.; G. A. Ransome, St. Bart.'s; H. G. Rees, Middlesex; T. G. Richards, Liverpool; A. E. G. Ridgway, London; T. J. Ryan, St. Bart.'s; H. B. C. Sandiford, St. Thomas's; R. D. Scriven, Westminster; F. W. Shepherd, Camb. and St. Bart.'s H. S. Shoham, Univ. College; J. P. Singer, Camb. and Guy's; F. J. Sladen, Middlesex; A. Smith, Leeds; B. W. Smith, Guy's; G. S. Steele-Perkins, Camb. and Guy's; M. Sternberg, Middlesex; J. N. Strauss, Manchester; Annie C. Taylor, Camb. and Univ. College; W. E. Thomas, Cardiff; A. S. Thorley, Univ. College; J. A. van Rooyen, St. Bart.'s; W. H. C. Watson, Camb. and St. Thomas's; W. H. Whiles, King's Coll.; F. C. H. White, Camb. and Birmingham; I. Whittington, St. George's; H. M. Williams, St. Bart.'s; G. Wilson, Guy's; J. I. Wilson, Univ. College; T. G. R. Woods, St. Bart.'s; H. W. Wykes, Middlesex; G. Zeidenfeld, St. Bart.'s.

Royal College of Surgeons of England.

A meeting of the Council of the Royal College of Surgeons was held on May 12th, with Lord Moynihan, the President, in the chair.

Diplomas of membership were granted to 154 of the 157 candidates whose names were given in our issue of May 7th as recipients of the L.R.C.P. (excepting S. N. Barker, A. L. Kenyon, and R. S. Sandhu), and also to F. H. Bentley, Manchester. A diploma in gynæcology and obstetrics was granted jointly with the Royal College of Physicians to D. P. de Villiers.

It was announced that the Lister medal for 1933 for distinguished contributions to surgical science had been awarded to Sir Charles Ballance, who will deliver the Lister memorial lecture at the College on some date in 1933.—It was reported that a bequest to the College by the late Mr. J. W. Groves had now become payable. The bequest is expected to amount to about £10,000, and the interest derived from it is intended for the purposes and objects of the museum, including the purchase of collections.

Diploma in Medical Radiology.

Regulations have just been instituted by the Royal College of Physicians of London and the Royal College of Surgeons of England for obtaining the diploma in Medical Radiology (D.M.R., R.C.P. & S. Eng.). The examination comprises: Part I.—Physics as applied to Radiology. Part II.—Medical Radiology, with special reference to its clinical application, including Radiodiagnosis. X Ray Therapy and Radium Therapy. Both parts will be held during the months of June and December. Eligible are candidates holding a qualification in medicine, surgery, and midwifery registrable in the British Register, or the M.D., or M.B., B.S. degrees of any University recognised by the examining board. The course of study extends over one academic year (nine months) of full-time study subsequent to the attainment of a recognised qualification. Appended to the regulations is a syllabus for Part I. No syllabus is issued for Part II. of the examination.

Royal College of Surgeons of Edinburgh.

At a meeting of the College on May 16th, with Mr. J. W. Dowden. the President, in the chair, the following 14 successful candidates (out of 82 entered) who passed the requisite examinations between Jan. 1st and 11th were admitted Fellows:—

Charles Bevan Carew Anderson, M.B. Edin.; Peter Melville Ballantyne, M.B. Toronto; John Bruce, M.B. Edin.; Santosh Kumar Chatterji, M.B. Calcutta; Daniel Peter de Villiers, M.B. Liverp.; David McKee Dickson, M.B. N.Z.; David Gamsu, M.D. Durh.; Edward Roger Graham Kirkpatrick, M.B. Sydney; Hyman Barnett Lieberman, M.B. Sydney; William Patrick, M.B. Glasg.; Lawrence Lees Playfair, M.D. Q.U. Ontario; George Largie Reid, M.B. Edin.; John Knox Stafford Thomson, M.B. Dub.; and Ronald Lister Verco, M.B. Adelaide.

The following candidates received the higher dental diploma:—

W. G. Middlemass, David Logie, G. B. Schofield, and C. L. Frizell.

The Liston Victoria jubilee prize, instituted in 1887 by Dr. Robert Halliday Gunning, and awarded triennially for the greatest benefit done to practical surgery by a Fellow or licentiate of the College, was awarded to Norman McOmish Dott, F.R.C.S. Edin.

Society of Medical Officers of Health.

Fever Hospitals Group.—The annual meeting of this group will be held at 1, Upper Montague-street, London, W.C., at 3.30 P.M. on Friday, May 27th, when Mr. W. H. Hobday, F.R.I.B.A., will read a paper on Isolation Hospital Construction.

Royal Northern Group of Hospitals.

A series of post-graduate lectures and demonstrations, to be given at the Royal Northern Hospital and the Royal Chest Hospital during the summer, begins next Monday with a week's "intensive" course. This will consist of two lectures each afternoon, with teaching in the wards and elsewhere at other times. A similar course will be held from June 13th to 17th. A full programme, including particulars of the ordinary weekly lectures on Tuesday or Wednesday afternoons, may be had from Dr. E. G. B. Calvert, dean of the hospital, Holloway-road, N. 7.

University of Oxford.

The Herbert Spencer lecture for 1932 will be given by Mr. R. A. Fisher, F.R.S., at the University Museum on June 8th. His subject is the Social Selection of Human Fertility.

Journées Médicales de Bruxelles.

This congress will hold its twelfth meeting from June 25th to 28th, under the presidency of Prof. Fernand Héger. The secretary-general is Dr. René Beckers, 141 rue Belliard, Brussels.

South-West London Medical Society.

Sir Humphry Rolleston will deliver the Bolingbroke lecture before this society at 9 P.M. on Wednesday, May 25th, at the Bolingbroke Hospital, Wandsworth Common. His subject will be the Advances in Medicine during the last Fifty Years.

Memorial to Dame Mary Scharlieb.

A ward will be dedicated and a tablet unveiled to the memory of Dame Mary Scharlieb, M.S., at the Royal Free Hospital at 4.45 P.M. on Tuesday, May 31st. The speakers will be Lady Barrett, Dr. Rosa Clark, and Dame Louise McIlroy; the ward will be dedicated by the Bishop of London; and the tablet will be unveiled by Lord Riddell, president of the hospital.

British Institute of Philosophy.

Sir Herbert Samuel, Secretary of State for Home Affairs, will deliver a presidential address, entitled Philosophy and the Ordinary Man, at 8.30 P.M. on Wednesday, May 25th, at University College, Gower-street, London, W.C. Tickets may be had from the Director of Studies, University Hall, 14, Gordon-square, W.C. 1.

Glasgow University Club, London.

The annual summer dinner of this club is to be held at the Café Royal, 68, Regent-street, W., at 7.15 for 7.30 P.M., on Friday, June 10th. The chair will be taken by the Very Reverend Sir George Adam Smith, principal of the University of Aberdeen. Any Glasgow University men who though not members of the club desire to attend are asked to communicate with the hon. secretaries, 62, Harley House, N.W. 1.

The Stamford Infirmary Difficulty.

Dr. G. Staveley Parker, who on March 30th last was dismissed from the staff of the Stamford and Rutland Infirmary for alleged breaches of the rules, and reinstated a fortnight later on a vote by a majority of the governors, has again been dismissed by a majority of 42 to 13. By the same resolution his partner, Dr. J. Purce, was appointed assistant surgeon. Dr. Purce has, however, declined the appointment.

Conference on Sterilisation.

As already announced, a Conference on Voluntary Eugenic Sterilisation will be held at the Caxton Hall, Westminster, on May 23rd under the auspices of the Eugenics Society. The speakers will include Sir Thomas Horder, Dr. R. Langdon-Down, Mr. C. J. Bond, Dr. C. P. Blacker, Lord Riddell, Mrs. C. B. S. Hodson, Prof. A. M. Carr-Saunders, and Prof. R. Ruggles-Coates, and in the evening, at 8.30, there will be a session at which members of the public may express their views and ask questions. The secretary's address is 16, Mulberry-walk, London, S.W. 3.

Society for Relief of Widows and Orphans of Medical Men.

At the annual general meeting, *held on May 11th*, Mr. V. Warren Low presiding, it was reported that the total membership of the society is 282, made up of 160 life members, 121 ordinary members, and one honorary member. On Dec. 31st, 1931, there were 49 widows and 6 orphans in receipt of grants. Five widows died during the year. One came on the fund in 1887 and received in grants £3300, another in 1917 and received £925, another in 1920 and received £750, another in 1922 and received £750, and the fifth, who came on the fund in 1926, received £450. The annual grant to widows over 65 years of age was £75, to those under 65, £60. Each orphan under 16 received £50. In addition a Christmas present of £15 was made to widows over 75 years of age, and £10 to each widow under that age. Each orphan received £10. The Copeland Fund is for orphans over the age of 16, who, owing to some permanent disablement, are prevented from earning a livelihood. The grant from this fund is £30 per annum. The sum of £389 8s. was also paid to eight orphans who had reached the age of 16, to enable them to continue their education at school or to start on some professional or business career. The grants are practically the same as last year. Invested funds remain the same—namely, £140,700. No legacies were received during the year.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, May 23rd.—8 P.M., ODONTOLOGY. Annual General Meeting at the Royal College of Surgeons, Lincoln's Inn Fields, W.C. Election of Officers and Council. Demonstration: Sir Frank Colyer will show new specimens received in the Museum during the past year.

TUESDAY.—5 P.M., MEDICINE. Election of Officers and Council. 8 P.M., [illegible] Discussion: So[illegible] and Treatment [illegible] Dr. W. R. F. [illegible] W. H. Bradley.

THURSDAY.—8.30 P.M., UROLOGY. Election of Officers and Council. Paper: Mr. H. P. Winsbury-White: Perinephric Inflammation.

FRIDAY.—DISEASE IN CHILDREN. No meeting. 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Election of Officers and Council. Paper: Sir Aldo Castellani: The Epidemiology of Some Typical Mycoses.

SATURDAY.—12.30 P.M., PHYSICAL MEDICINE. The Annual Summer Meeting will take place at Alton. Special demonstrations of cases and appliances at the Treloar Cripples' Hospital.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, May 27th.—8.30 P.M., Dr. Otto May and Mr. H. E. Melville: The Attitude of Life Insurance Societies to Venereal Disease. A discussion will follow.

SOUTH-WEST LONDON MEDICAL SOCIETY.

WEDNESDAY, May 25th.—[illegible] Hospital, Bolingbroke-grove, [illegible] Sir Humphry Rolleston: [illegible] During the Last Fifty Years. (Bolingbroke lecture.)

MEDICO-LEGAL SOCIETY.

THURSDAY, May 26th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Colonel L. W. Harrison: The Medico-legal Aspects of Venereal Disease, followed by *a discussion.*

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 23rd, to SATURDAY, May 28th.—LONDON [illegible] S.W. LIGHT AND ELECTRICAL C[illegible] An evening course in Ph[illegible] Wed. from 8 to 9 P.M. [illegible] CLINICAL PATHOLO[illegible] Epidiascope and [illegible] Knyvett Gordon on [illegible] —ST. JOHN'S HOSPITAL, Leicester-square, W.C. Afternoon course in Dermatology. Clinical work at 2 P.M. and 6 P.M. daily. Lectures on Mond., Tues., Thurs., and Frid. at 5 P.M.—PRINCE OF WALES'S HOSPITAL, Tottenham, N.15. All-day course in Medicine, Surgery, and the Specialties. 10.30 to 4.30 P.M. daily. Operations, special demonstrations, lectures.—(The above courses are open only to Members of the Fellowship of Medicine.)

CHADWICK TRUST.

MONDAY, May 23rd.—5.15 P.M. (at the House of the Royal Society of Arts, John-street, Adelphi), Sir Ernest Graham-Little: Dermatology as an Outpost of Medicine (Malcolm Morris lecture).

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

(Intensive Course.)

MONDAY, May 23rd.—2.15 P.M., Mr. F. D. Saner: Selected Cases. 3.15 P.M., Mr. C. S. Lane Roberts: Some Drugs in Pregnancy and Labour.

TUESDAY.—2.15 P.M., Dr. E. G. B. Calvert: Recent Work on the Anæmias: Ætiology and Treatment. 3.15 P.M., Mr. Kenneth Walker: Renal Pain.

WEDNESDAY.—2.15 P.M., Dr. Bernard Schlesinger: Demonstration of Cases in the Children's Ward. 3.15 P.M., Dr. H. C. Semon: Case Demonstration.

THURSDAY.—2.15 P.M., Mr. Eric Lloyd: Bone Setting. 3.15 P.M., Mr. E. Wolff: Ocular Headache.

FRIDAY.—2.15 P.M., Dr. Claude Gouldesbrough: Fractures and Dislocations (continued). 3.15 P.M., Dr. P. O. Ellison and Dr. Sholto McKenzie: Pathological Investigations.

NATIONAL HOSPITAL, Queen-square, London, W.C.

MONDAY, May 23rd.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Borderland of Epilepsy.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: [illegible]

WEDNESDAY.—2 P.M., Dr. [illegible]

THURSDAY.—2 P.M., Dr. Kin[illegible] 3.30 P.M., Dr. Critchley: Electrical Injuries of the Nervous System.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Muscular Atrophy.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, May 27th.—4 P.M., Mr. H. Kisch: Nasal Obstruction.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION; St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, May 25th.—4 P.M., Mr. G. Perkins: Modern Tendencies in the Treatment of Non-pulmonary Tuberculosis.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, May 25th.—Dr. G. R. M. Cordiner: Urinary Symptoms. Radiological Interpretation.

ST. MARK'S HOSPITAL, City-road, E.C.
THURSDAY, May 26th.—4.30 P.M., Sir Charles Gordon-Watson: Diagnosis and Treatment of Carcinoma of the Colon.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.
WEDNESDAY, May 25th.—3 P.M., Mr. J. Swift Joly: Operation of Prostatectomy.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.
WEDNESDAY, May 25th.—5 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Clinical Cases.

LONDON JEWISH HOSPITAL, Stepney Green, E
THURSDAY, May 26th.—4.15 P.M., Dr. David Krestin: Demonstration of Cases.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.
WEDNESDAY, May 25th.—4.30 P.M., Mr. Ogier Ward: Bladder and Prostate.

ROYAL INSTITUTION, Albemarle-street, W.
FRIDAY, May 27th.—9 P.M., Sir Walter Morley Fletcher: New Conceptions of Medical Research.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
MONDAY, May 23rd.—5 P.M., Dr. H. Haldin-Davis Drug Eruptions.
TUESDAY.—5 P.M., Dr. J. E. M. Wigley: Napkin Area Eruptions.
THURSDAY.—5 P.M., Dr. A. M. H. Gray: Sclerema.
FRIDAY.—5 P.M., Dr. W. J. O'Donovan: Tuberculosis of the Skin.

UNIVERSITY OF BIRMINGHAM.
WEDNESDAY, May 25th.—4 P.M., Mr. C. J. Bond: Some Aspects of Human Biology. (Last William Withering Memorial Lecture.)

EYE INFIRMARY, Glasgow.
WEDNESDAY, May 25th.—4.15 P.M., Dr. A. J. Ballantyne and Dr. S. S. Meighan: Eye Cases.

Appointments

ELKINGTON, J. ST. C., M.B., B.Chir. Camb., M.R.C.P. Lond., has been appointed Physician to Out-patients, St. Thomas's Hospital.

RUSHWORTH, J. A., L.R.C.P. Lond., M.R.C.S., Assistant Tuberculosis Officer, Liverpool Health Department.

SIMPSON, N. C., M.D., Ch.B. Aberd., Certifying Surgeon under the Factory and Workshop Acts, Newmarket District.

WARBURTON, P. D., L.R.C.P. Lond., M.R.C.S., D.P.H., Honorary Surgeon, West of England Eye Infirmary, Exeter.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Sen. and Jun. H.S. At rate of £150 and £120 respectively.

Banbury, Oxon, Horton General Hospital.—Res. M.O. At rate of £150.

Bedford County Hospital.—Second H.S. At rate of £140.

Benenden, Kent National Sanatorium.—Res. Asst. M.O. £300.

Birkenhead General Hospital.—Hon. Asst. Surgeon.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.

Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150

Bristol, City and County of.—Asst. M.O.H. £500.

Bristol General Hospital.—Hon. Obstet. Phys. and Gynæcologist, Hon. Asst. Obstet. Phys. and Gynæcologist; also Hon. Surg. and Hon. Asst. Surg.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Camberwell House, London, S.E.—Third Asst. M.O. £300.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Carlisle. Cumberland Infirmary.—Second H.S. £155.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.

Chesterfield and North Derbyshire Royal Hospital.—H.S. £150.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Colchester, Essex County Hospital.—Asst. H.S. £120.

Coventry and Warwickshire Hospital.—Res. Cas. O. £125.

Derby, Derbyshire Royal Infirmary.—H.S. for General Surgery. £150.

Dewsbury and District General Infirmary.—Second H.S. £150.

Doncaster Royal Infirmary.—H.S. and Cas. H.S. Each at rate of £175.

Durham County Council.—Asst. Welfare M.O. £500.

Durham University College of Medicine, Newcastle-upon-Tyne.—Professorship of Bacteriology. £1000.

East Ham County Borough.—Asst. M.O. £500.

East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £200.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., Obstetric Asst. Also three H.S.'s. Each at rate of £50.

Galway, University College.—Professorship of Medicine. £336–£350.

General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anæsthetist. At rate of £100.

Glasgow, West of Scotland Neuro-Psychiatric Research Institute.—Director. £850.

Gloucester. Gloucestershire Royal Infirmary, &c.—Asst. Surgeon.

Golden-square Throat, Nose, and Ear Hospital, W.—H.S. £100.

Halifax, St. Luke's Hospital.—Jun. Res. M.O. £250.

Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150. Also H.P. and H.S. Each at rate of £100.

Ilford, King George Hospital.—H.S. At rate of £100.

Indian State Railways.—District M.O. Rs.650 per mensem.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120. Also Res. M.O. £350.

Kingston-upon-Hull, Hull Municipal Maternity Home and Infants Hospital.—Jun. Res. M.O. At rate of £100.

Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.

L.C.C.—Temporary Asst. Organisers. 66*s.* 6*d.* each a week.

L.C.C. District 11, Area IX., Deptford.—Temp. District M.O. £210.

London Jewish Hospital, Stepney Green. E.—Clin. Asst.

Manchester.—Asst. M.O. for Crossley Sanatorium, Delamere Forest, Cheshire. £200.

Manchester and District Radium Institute.—Asst. M.O. £500. Also Clin. Asst. £250.

Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Hon. Physician.

Middlesex County Council.—Dist. M.O. for Harmondsworth &c.—£97–£100. Also Public Vaccinator.

Miller General Hospital, Greenwich-road, S.E.—Cas. O. At rate of £150. Also H.S. and H.P. Each at rate of £100.

National Hospital, Queen-square, W.C.—Asst. Pathologist. £250.

Newark General Hospital.—Res. H.S. £175.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Med. Regs. Each £250.

Nottingham General Hospital.—Res. Cas. O. At rate of £200.

Oldham Royal Infirmary.—H.S. At rate of £175.

Plymouth Central Hospital.—Res. H.S. At rate of £150.

Princess Louise Kensington Hospital for Children, St. Quentin-avenue, North Kensington, W.—H.S. At rate of £75.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.

Queen Mary's Hospital for the East End, E.—Res. M.O. At rate of £200. Also Cas. O., H.P.'s and H.S.'s. At rate of £150 and £120 respectively.

Richmond Borough (Surrey).—M.O. to Antenatal Clinic. £1 11*s.* 6*d.* per session.

Royal Chest Hospital, City-road, E.C.—Med. Regs. £50.

Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. At rate of £150. Also H.S.'s, H.P.'s, &c. All at rate of £100. Also H.P. to Children's Dept.

Royal London Ophthalmic Hospital, City-road, E.C.—Five Out-Patients Officers. Each £100.

Salford, City.—Jun. Asst. for Venereal Diseases Treatment Centre. At rate of £500.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square W.C.—In-patient Med. Reg. £50.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—Res. Surg. O. At rate of £150.

St. Stephen's Hospital, Fulham-road, S.W.—Clin. Asst. At rate of £100.

St. Thomas's Hospital.—Physician for Skin Dept.

Samaritan Free Hospital for Women, Marylebone-road.—Hon. Surg. to Out-patients.

Truro, Royal Cornwall Infirmary.—H.S. £170.

University College Hospital, Gower-street, W.C.—Hon. Asst. P.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Surg to Ear, Nose, and Throat Dept.

Warrington Infirmary and Dispensary.—Jun. H.S. £175.

West End Hospital for Nervous Diseases, Welbeck-street, W.—Hon. Anæsthetist.

Weston-super-Mare, General Hospital.—Res. H.S. £150.

Willesden General Hospital, N.W.—Clin. Assts. for Out-patient Department.

Wolverhampton Royal Hospital.—H.S. At rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Middleton (Lancaster); Talybont (Cardigan); and at Droitwich (Worcester).

Births, Marriages, and Deaths

BIRTHS.

FARQUHARSON.—On May 11th, at Breda, Severn-avenue, Weston-super-Mare, the wife of Dr. J. L. Farquharson, of a daughter.

LYONS.—On May 15th, at 12, The Avenue, Lincoln, to Dorothy, the wife of J. Lyons, M.D., F.R.C.S.—a daughter.

WARD.—On May 10th, at Deepdene, Cheadle Hulme, Cheshire, the wife of John Forbes Ward, M.D., of a daughter.

MARRIAGES.

SELLORS—CHESSHIRE.—On May 11th, in London, Thomas Holmes Sellors, M.Ch., F.R.C.S., of Gordon-mansions, Francis-street, W.C., to Dorothy Elizabeth, eldest daughter of Mr. and Mrs. John Chesshire, formerly of Worcestershire.

DEATHS.

BLACKBURN.—On May 11th, William Howard Blackburn, M.A., M.B., B.Ch., D.P.H., M.R.C.S., M.O.H.

HULL.—On May 12th, as the result of an accident, at Beaufort Lodge, Streatham Common, Edward Gordon Hull, M.A., M.D., D.S.M.

PAXON.—On May 7th, at Eastern Fever Hospital, Homerton, Valentine Preston Paxon, B.A., B.Ch., aged 28.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE VIRUS OF POLIOMYELITIS.

A LEADING article in our issue of April 16th summarised some recent advances in the identification of filtrable viruses with elementary bodies visible under the microscope. Work along these lines has lately given fairly definite results in relation to poliomyelitis, and goes far to confirm the findings of Flexner and Noguchi 20 years ago. From cases of poliomyelitis these investigators grew cultures of what they described as "globoid bodies." Since then, however, similar appearances have been described in several different diseases and some of them have been shown to be artefacts. The importance of Flexner and Noguchi's observations has therefore been doubted, but they are brought back into prominence by the experiments of P. H. Long, P. K. Olitsky, and C. P. Rhoads[1] at the Rockefeller Institute, New York.

The globoid bodies were described by Noguchi and Flexner as minute formed structures cultivated either from unfiltered emulsions of the nervous tissues or from the filtrate after passage through a Berkefeld candle.

The culture medium consisted essentially of human ascitic fluid to which had been added a fragment of sterile, fresh tissue, usually rabbit's kidney. The liquid was covered with a deep layer of sterile paraffin and incubated at 37° C. After five days an opalescence appeared about the fragments of tissue and after a further three to five days it extended into the upper portion of the medium. After 10 to 12 days the haziness began to diminish and irregular particles were *formed which slowly fell to the bottom of the tube.*

To demonstrate colony formation by the "bodies" a semi-solid medium was used, consisting of ascitic fluid and kidney with sufficient 2 per cent. agar to produce a solid mixture. This medium was not successful for initial growths, but transfer could be effected to it after about the third generation of growth in the fluid medium. In this medium minute colonies formed about the tissue fragments. It was shown that neither the ascitic fluid nor the kidney was essential for the formation of globoid bodies, and although media from which both of these tissues were absent were inferior to the mixtures containing them, it was apparent that the growth was not derived from the kidney tissue or ascitic fluid, but primarily from the inoculum.

The globoid bodies were minute globular structures 0·15–0·3μ in diameter and arranged in pairs, chains, *or small masses according to the nature of the medium* ; in earlier generations the bodies stained feebly with Gram's stain, but in other cultures more intensely. It seemed that considering their property of forming definite colonies and their distinctive morphology these bodies were entitled to be regarded as organisms.

Flexner and Noguchi found that only exceptional cultures were pathogenic when injected intracerebrally into monkeys.

Two sets of inoculation experiments were, however, reported, one with globoid bodies derived from human cases, and the other with those derived from the M.A. virus already propagated in a long series of monkeys. With the human strain the third sub-plant (third generation) of the "organisms" proved fatal to monkeys ; the animals developed poliomyelitis and from their nervous systems globoid bodies were in turn cultivated. With the monkey strain the third, fifth, and sixth generations produced positive results. In addition, a monkey was inoculated with a mixed culture representing the eighteenth and twentieth generations and, although it died from an intercurrent infection, from its central nervous system, after death a filtrate was obtained which gave rise to typical experimental poliomyelitis in another monkey.

Subsequently, Flexner, Noguchi, and Amoss obtained what they regarded as "mass" cultures of globoid bodies and proved that they were infective and that globoid bodies could be cultivated again from the nervous system of the animals dying of poliomyelitis after the inoculation. It was shown that globoid bodies kept in the semi-solid medium at room temperature were still pathogenic for the monkey 19 months after their isolation. In the ice-box too, as Amoss afterwards showed, they could survive several months. Strict anaerobiosis was *essential.*

Long, Olitsky, and Rhoads, in their repetition of this work, inoculated about 50 tubes of medium during each attempt at cultivation. They used virus from the brains of seven monkeys. After 10 to 14 days each tube was examined ; any that showed contamination with known bacteria was discarded, any that showed material resembling globoid bodies was sub-planted to six or eight tubes of Noguchi's fluid medium. Controls were kept at all stages. The opalescence described by Flexner and Noguchi was not detected, but out of 31 [illegible] 36 showed minute bodies [illegible] such apparent growths were obtained from all seven monkeys, but those from three failed after the first sub-planting ; the others showed successive "growths" up to the third, fourth, eighth, and eleventh sub-planting, respectively.

In early sub-plants the bodies were single, in pairs, or in short chains, and the individual bodies had a fairly uniform appearance. In older sub-plants the bodies were more numerous and in part formed agglomerated masses. They stained well with alkaline methylene-blue, but not, as a rule, with Gram's stain. It is important to note that in almost all film preparations from sub-plants kidney tissue-cells and leucocytes were observed.

The cultures of the successive sub-plants were pathogenic for monkeys ; the animals developed typical experimental poliomyelitis and after their death, inoculation of material from their nervous systems into other monkeys reproduced the disease. Furthermore, in every case except one, globoid bodies were again cultivated from the nervous tissues of the monkeys after death. Such results were obtained with the sixth, seventh, eighth, ninth, and tenth sub-plants from one of the original cultures. The seventh transfer represents a dilution of the original material of about $1{\cdot}5 \times 10^{12}$ and the tenth of about $1{\cdot}3 \times 10^{13}$. Flexner and Noguchi had calculated that without reproduction of the virus by growth, the limit beyond which the mixture would not be infective was represented by the second transfer of the original virus in the culture medium.

It was found that tubes which did not show the appearance of "globoid bodies" were not infective. Thus, material from four such tubes of the ninth transfer, and again from five such tubes of the tenth transfer failed to produce any disease when inoculated into monkeys in the usual way, although as has been said, "positive" tubes of the same *generation had been found to* be actively pathogenic.

As regards colony growth, Flexner and Noguchi's special semi-solid medium was not used. but on rabbit-blood-dextrose-agar plates incubated anaerobically, no colonies were detected. "Mass" cultivation was also unsuccessful.

From their study of these minute bodies Long, Olitsky, and Rhoads were not convinced that they were dealing with cultures of the actual "globoid bodies" or indeed of any living micro-organism. Nevertheless, the inoculation experiments left no doubt that the poliomyelitic virus had multiplied in the culture tubes and they believe that it increased as a consequence of being in a medium of modified tissue-cell culture ; for in almost all specimens many well-preserved kidney tissue-cells and leucocytes were observed, the latter being probably derived from the ascitic fluid. Since only those tubes which showed the appearance of globoid bodies were infective, it may be that the virus is adsorbed to these bodies : but no suggestion is offered as to the derivation of the globoid bodies themselves.

Since the publication of this work it has been announced (*Times*, Jan. 2nd, 1932) that Prof. F. Eberson, of San Francisco, has succeeded in isolating the causal organism of poliomyelitis, which is stated to become visible only after several weeks' cultivation.

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[1] Jour. Exper. Med., 1930, lii., 361.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—Special post-graduate facilities are offered at the Royal Maternity and Women's Hospital during August and September. Particulars may be had from the house superintendent of the hospital, Rottenrow, Glasgow.

A SUPRAPUBIC CATHETER AND ITS MANAGEMENT.

In 1923 a business man, aged 69, underwent prapubic cystotomy because of simple enlargement f the prostate. Thereafter, until his death in March, 931, urine was passed solely through the cystotomy pening, and a number of methods were used to ecure comfort and freedom from leakage.

His widow informs us that for the first 15 months fter the operation success in these objects was not ttained, although no limit was put to expenditure r scope of inquiry. Self-retaining catheters, it was ound, were apt to give pain in insertion and withrawal, and they "may cause serious trouble if mportant parts of the head perish and give way. traight catheters are liable to leak, and rarely proved eliable for all positions of the body." Progressive ncrease in their size proved necessary, and their use vas therefore abandoned.

Numerous firms were consulted and offered ingenious levices for absorbing, detaining, or directing leakage as it occurred. It was felt, however, that the leakage must be stopped at the bladder end of the sinus, and this led the patient's wife to devise the method described below.

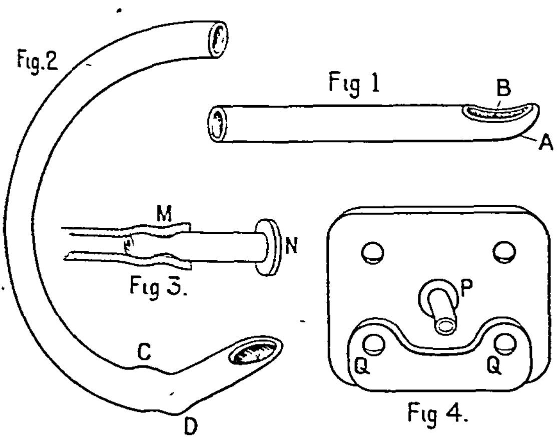

FIG. 1.—Termination of a straight catheter, showing spoon-shaped outer surface and long aperture ($\frac{5}{8}$ in.).
FIG. 2.—Catheter prepared for use, showing curve and bulges. C, Decided bulge on inner side of curve. D, Slight bulge on outer side of curve.
FIG. 3.—Hollow bottle-shaped glass stopper: M, open end entering catheter; N, closed end.
FIG. 4.—Bone gadget laid over lower part of rubber shield, shaped bone 1/16 in. thick, with two holes fitting over studs at Q. P is place of emergence of catheter.

During 1925 and 1926, after its adoption, the patient missed only two days at business, living an ordinary active life from 10.30 A.M. to 9.15 P.M., and usually required no nursing attention during the day. No extra bed-linen or personal garments were needed. He was very well, put on weight, and was able to walk one and a half miles quite easily until late in 1929. On one occasion in 1926 he travelled from King's Cross to Leeds, inspected a large factory, and returned on the same day without undue fatigue. In January, 1928, there was serious leakage, but the same method was pursued successfully after advancing to catheter No. 23.

From this time on the method was not uniformly successful: there were occasional leakages. The patient was now very gradually losing ground, and the diminution of bladder capacity caused difficulty. Still success was often attained for weeks and months at a time, and extra bed-linen was rarely required until 1930. The patient was able to enjoy life, and spent several hours a day at business up to the end of 1929. In the last two months of his life there was leakage about one-third of the time, but the method was still largely successful. Dr. E. Collingwood Andrews states that until the last few weeks the urine remained acid and free from pus.

The apparatus used has the following features as stated by the designer:—

Special shaped ends.—Many straight catheters with side apertures have much superfluous rubber on the ends beyond the aperture. To avoid this spoon-shaped ends with slightly longer apertures were employed (Fig. 1). This made a great deal of difference to the patient's comfort, and lessened the likelihood of internal contact. As a result there was usually no trace of blood in the urine.

Elimination of leakage.—The straight catheter is a cylindrical body passing in use through an approximately cylindrical passage. Any straight cross-section of a cylinder is a circle, any slanting cross-section is an ellipse of greater area than the circle; therefore, if a cylindrical catheter be curved or bent and adjusted so that an elliptical cross-section occupies the bladder end of the sinus, leakage can be prevented. In the course of a handicraft method of curving the catheters certain bulges appeared incidentally which assisted to stop leakage. The curved catheter is illustrated in Fig. 2.

Device for adjustment.—It was found in practice that there was still a slight occasional oozing from the lower side of the circle of emergence of the catheter, due to some wobbling. This was corrected by strongly reinforcing the rubber tube part of the shield containing the catheter, and more especially by introducing a shaped bone gadget 1/16 in. thick laid on the lower part of the shield, as shown in Fig. 4. With these arrangements the patient was able to wear the same gauze dressings for 48 hours. The catheter was usually kept in for a fortnight, being changed in a regular routine every other Saturday night. Occasionally a very comfortable one was used a few days longer.

Leakage at special times.—Still there might be leakage at a bath time or any short period when the catheter was clipped up and the urinary bottle had been removed. Fig. 3 shows a device to prevent this, a hollow glass stopper placed in the catheter; the patient can see when it fills and evacuate, so that this type of leakage is not permitted. Analogous to this, not illustrated, is the suggestion of an extremely light temporary bottle, capacity half a pint only, for direct application to the catheter, for use in the late stages when the patient is often out of bed restlessly for short intervals. Another device which should be very useful in nursing these cases is a frictionised, powerfully elastic, ring-shaped band to secure the catheter at the outside point of entry to the rubber shield; this makes readjustments much easier and quicker than when sticky plaster is used.

NORWOOD SANATORIUM, LIMITED.

THE twenty-fifth report of the Rendlesham and Beckenham Branches of the Norwood Sanatorium opens with statistics showing that deductions are made upon a large basis. Over 7000 patients, being an average of 280 a year, are passed under review, 5983 males and 1061 females, the ages of the males varying from 20 to 72 and of the females from 25 to 76 years. Of these cases 1904 appeared to have an alcoholic heredity, 992 from paternal sources, 314 from maternal sources, and 898 from both parents. The patients have all belonged to the relatively upper strata of society in which, it would seem, the predisposition to indulgence may be definitely inherited, but in this connexion a comment, in the paragraph describing the occupation of the patients, is to the point. For it stands out clearly that those patients with little or no occupation, whatever their social status, are apt to fall victims of the habit. In women of all classes menstrual troubles, particularly dysmenorrhœa and depression associated with menopause are found definitely to lead to alcoholism. Commenting on the causation of other drug habits we have the satisfactory assertion that the operations of the Dangerous Drugs Acts have had a remarkable result in diminishing the number of cases of patients who have become addicts. The report closes with the satisfactory statement from the medical superintendents, that investigations are in progress to determine the fasting blood-sugar value in persons who have a craving for alcohol.

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A LEADING article in our issue of April 16th summarised some recent advances in the identification of filtrable viruses with elementary bodies visible under the microscope. Work along these lines has lately given fairly definite results in relation to poliomyelitis, and goes far to confirm the findings of Flexner and Noguchi 20 years ago. From cases of poliomyelitis these investigators grew cultures of what they described as "globoid bodies." Since then, however, similar appearances have been described in several different diseases and some of them have been shown to be artefacts. The importance of Flexner and Noguchi's observations has therefore been doubted, but they are brought back into prominence by the experiments of P. H. Long, P. K. Olitsky, and C. P. Rhoads [1] at the Rockefeller Institute, New York.

The globoid bodies were described by Noguchi and Flexner as minute formed structures cultivated either from unfiltered emulsions of the nervous tissues or from the filtrate after passage through a Berkefeld candle.

The culture medium consisted essentially of human ascitic fluid to which had been added a fragment of sterile, fresh tissue, usually rabbit's kidney. The liquid was covered with a deep layer of sterile paraffin and incubated at 37° C. After five days an opalescence appeared about the fragments of tissue and after a further three to five days it extended into the upper portion of the medium. After 10 to 12 days the haziness began to diminish and irregular particles were formed which slowly fell to the bottom of the tube.

To demonstrate colony formation by the "bodies" a semi-solid medium was used, consisting of ascitic fluid and kidney with sufficient 2 per cent. agar to produce a solid mixture. This medium was not successful for initial growths, but transfer could be effected to it after about the third generation of growth in the fluid medium. In this medium minute colonies formed about the tissue fragments. It was shown that neither the ascitic fluid nor the kidney was essential for the formation of globoid bodies, and although media from which both of these tissues were absent were inferior to the mixtures containing them, it was apparent that the growth was not derived from the kidney tissue or ascitic fluid, but primarily from the inoculum.

The globoid bodies were minute globular structures $0{\cdot}15$–$0{\cdot}3\,\mu$ in diameter and arranged in pairs, chains, or small masses according to the nature of the medium; in earlier generations the bodies stained feebly with Gram's stain, but in other cultures more intensely. It seemed that considering their property of forming definite colonies and their distinctive morphology these bodies were entitled to be regarded as organisms.

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Two sets of inoculation experiments were, however, reported, one with globoid bodies derived from human cases, and the other with those derived from the M.A. virus already propagated in a long series of monkeys. With the human strain the third sub-plant (third generation) of the "organisms" proved fatal to monkeys; the animals developed poliomyelitis and from their nervous systems globoid bodies were in turn cultivated. With the monkey strain the third, fifth, and sixth generations produced positive results. [illegible] inoculated with a mixed culture [illegible] and twentieth generations an[illegible] an intercurrent infection, from its central nervous system, after death a filtrate was obtained which gave rise to typical experimental poliomyelitis in another monkey.

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Long, Olitsky, and Rhoads, in their repetition of this work, inoculated about 50 tubes of medium during each attempt at cultivation. They used virus from the brains of seven monkeys. After 10 to 14 days each tube was examined; any that showed contamination with known bacteria was discarded, any that showed material resembling globoid bodies was sub-planted to six or eight tubes of Noguchi's fluid medium. Controls were kept at all stages. The opalescence described by Flexner and Noguchi was not detected, but out of 315 tubes originally inoculated, 30 showed minute bodies suggesting micro-organisms; such apparent growths were obtained from all seven monkeys, but those from three failed after the first sub-planting; the others showed successive "growths" up to the third, fourth, eighth, and eleventh sub-planting, respectively.

In early sub-plants the bodies were single, in pairs, or in short chains, and the individual bodies had a fairly uniform appearance. In older sub-plants the bodies were more numerous and in part formed agglomerated masses. They stained well with alkaline methylene-blue, but not, as a rule, with Gram's stain. It is important to note that in almost all film preparations from sub-plants kidney tissue-cells and leucocytes were observed.

The cultures of the successive sub-plants were pathogenic for monkeys; the animals developed typical experimental poliomyelitis and after their death, inoculation of material from their nervous systems into other monkeys reproduced the disease. Furthermore, in every [illegible] were again cultivated from the [illegible] after death. Such results we[illegible] seventh, eighth, ninth, and tenth sub-plants from one of the original cultures. The seventh transfer represents a dilution of the original material of about $1{\cdot}5 \times 10^{12}$ and the tenth of about $1{\cdot}3 \times 10^{13}$. Flexner and Noguchi had calculated that without reproduction of the virus by growth, the limit beyond which the mixture would not be infective was represented by the second transfer of the original virus in the culture medium.

It was found that tubes which did not show the appearance of "globoid bodies" were not infective. Thus, material from four such tubes of the ninth transfer, and again from five such tubes of the tenth transfer failed to produce any disease when inoculated into monkeys in the usual way, although as has been said, "positive" tubes of the same generation had been found to be actively pathogenic.

As regards colony growth, Flexner and Noguchi's special semi-solid medium was not used, but on rabbit-blood-dextrose-agar plates incubated anaerobically, no colonies were detected. "Mass" cultivation was also unsuccessful.

From their study of these minute bodies Long, Olitsky, and Rhoads were not convinced that they were dealing with cultures of the actual "globoid bodies" or indeed of any living micro-organism. Nevertheless, the inoculation experiments left no doubt that the poliomyelitic virus had multiplied in the culture tubes and they believe that it increased as a consequence of being in a medium of modified tissue-cell culture; for in almost all specimens many well-preserved kidney tissue-cells and leucocytes were observed, the latter being probably derived from the ascitic fluid. Since only those tubes which showed the appearance of globoid bodies were infective, it may be that the virus is adsorbed to these bodies; but no suggestion is offered as to the derivation of the globoid bodies themselves.

Since the publication of this work it has been announced (*Times*, Jan. 2nd, 1932) that Prof. F. Eberson, of San Francisco, has succeeded in isolating the causal organism of poliomyelitis, which is stated to become visible only after several weeks' cultivation.

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[1] Jour. Exper. Med., 1930, lii., 361.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—Special post-graduate facilities are offered at the Royal Maternity and Women's Hospital during August and September. Particulars may be had from the house superintendent of the hospital, Rottenrow, Glasgow.

ADDRESSES AND ORIGINAL ARTICLES

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E UNITY AND RELATIONSHIPS OF TOXIC NEPHRITIS.

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Some degree of clarity has emerged, as for example e abolition of such a name as chronic interstitial ephritis, and descriptions of nephritis by the colour nd size of the kidney. New classifications have een based on either the histological picture (Russell) r on this in correlation with the main clinical features Addis[2]). The use of old and new classifications t the same time is confusing, and their multiplicity uggests that they are not yet based on sound natural ivisions, if indeed such exist. In all schemes there re no definite borderlines between the divisions, hich hence are grouped arbitrarily in such a way s to accentuate certain main differences, just as he solar spectrum is divided into groups of wave- engths corresponding to our main visual perceptions f colour but without acknowledgment of the gradual transition of wave-length. Some classification of Bright's disease is essential for the convenience of the observer and for descriptive purposes, for the determination of the appropriate therapy, and for the acquisition of knowledge of ætiology, pathogeny, and particularly of prognosis.

So far no scheme is entirely satisfactory when considered from all points of view, and this is perhaps not surprising. Histological examination, however well correlated with the clinical standpoint, must rely on those cases which die; but death is not, as it were, evenly distributed among the so-called "types" of the disease, nor is it easy to build up a composite histological picture of the changes which occur in one case from material obtained from different cases at different stages. Even if this difficulty were overcome there are still other troubles in comparing clinical aspects—two cases might present histological features that are very similar, yet in one massive œdema is present, in the other absent. The clinical aspect is further confused by the reliance on so-called tests of renal function which are generally too coarse. A petrol engine may fail to yield its full power for many reasons, there may be increased friction in many parts, or the damage might be in one place, nevertheless the effects of diverse "lesions" on power output might be the same. Addis[3] introduced a method of estimating the amount of reduction of renal tissue, but identical degrees of reduction can be produced by various lesions, and advanced chronic patchy inflammation may reduce the renal capacity as much as an acute diffuse affection. Other methods of estimating renal function—as for example the estimation of blood-urea—are still less adequate, for increase of blood-urea only occurs when the "renal tissue" is reduced by at least 50 per cent.[4] Thus urea retention provides a very arbitrary standard for the comparison of cases of nephritis. Loss of renal function cannot yet be correlated with the histological appearances, the effects on renal excretory capacity of reversible or irreversible changes cannot be estimated, glomeruli normal or almost normal to the eye may yet be leaky filters, as indeed they must be in "genuine" nephrosis.

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UNIVERSITIES YEAR BOOK 1932.

THE Year Book of the Universities of the Empire for 1932, which has just reached us, differs little from its predecessor except that it has 36 more pages and includes a short bibliography of the universities of this country, with particulars of holiday courses and exchange of students. Apart from this there is nothing new; but the alterations and corrections have brought the information scrupulously up to date and make it the useful and authoritative book which it is. There are now 70 British universities, excluding the Hebrew University in Jerusalem, the calendars of which we are told make up the enormous bulk of 50,000 pages, accessible hardly anywhere except at the Bureau of Information for the Universities of the Empire, under whose auspices this book is issued. Sir Frank Heath, in compiling the directory of university staffs and giving in a nutshell the essential information about degrees, diplomas, and scholarships, is laying under his debt not only the universities themselves but all those who are concerned with education. The bureau at 88a, Gower-street, London, is at the disposal of any university member from overseas who visits London. The Year Book is published by Messrs. G. Bell and Sons at 15*s*.

SALVARSAN JAUNDICE.

AMONG the possible causes of salvarsan jaundice are the action of the metal arsenic itself or the benzene radicle combined with it, errors in the manufacture of the drug, faulty preparation or inefficient technique at the time of injection, and the activation of some latent hepatic or alimentary infection. H. Ruge[1] concerns himself with this last aspect of the problem, and bases his conclusions on an experience of some 2500 cases of jaundice observed in the German Navy personnel at Kiel between 1919 and 1929. He observes firstly, that during the ten years before the war the incidence of salvarsan jaundice was 1 in 500, that of simple jaundice among the non-luetic cases about the same. During and after the war there was a notable rise in both types, and in fact of all types of icterus. This general rise in the incidence of jaundice was not confined to the naval depôt at Kiel, but was also observed in the German Army, in the civil population, and also in Sweden, Norway, and the United States. It therefore seems that the exigencies of military conditions and defective nutrition were not the probable causes. Further, the interesting observation has been made that even among the salvarsan injected cases the jaundice may appear in a number of men treated at the same time and in the same clinic. Such "minor epidemics" occurred among naval ratings afloat, where the conditions were favourable to exact observation. It was noted, for instance, that a sporadic case of salvarsan jaundice might be followed some three to five weeks later by a small group of similar cases among men undergoing a course of salvarsan injections. Such an incubation interval strongly suggested infection, and the suggestion was supported by the results of repeated blood counts which during the various phases of the illness closely resembled those encountered in infective conditions generally. This observation naturally led to a routine bacteriological investigation which was performed on numberless occasions. In only 3 per cent, however, was the result positive, the organism being *B. paratyphosus* B. The Widal blood reaction, on the other hand, was positive in a much higher percentage (figure not stated) for this organism. Ruge finally concludes that the actual cause of the jaundice in the two groups of cases (simple and salvarsan) is the same—namely, an organism of the typhoid-coli group. The higher percentage of case-incidences among the salvarsan-injected cases is explained by the added burden of syphilis and of the drug upon a liver which is already infected.

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[1] Derm. Woch., 1932, xciv., 278.

A GENTEEL ADVERTISEMENT.

Dr. C. Willett Cunnington writes: THE LANCE does not usually publish advertisements of professiona abortionists, but possibly you may make an exceptio of the following, partly because of its genteel phrase ology, partly because the advertiser is presumabl by now out of business. The date, as you will see is 125 years ago. It is taken from *La Belle Assemblee* or *Bell's Court and Fashionable Magazine*, o September, 1807.

> "Lost Happiness Regained.—Any lady of respectabilit involved in distress from any expectation of inevitabl dishonour, may obtain consolation and security and real friend in the hour of anxiety and peril, by addressi a line (post-paid) to Mrs. Grimston, No. 18, Broad-stree Golden-square, when a private interview with the advertis will be appointed. Ladies thus situated may depend on t strictest secrecy and motherly attention, combined wi every comfort so necessary on those occasions for the restor tion of that serenity of mind generally attendant cultivated life."

This is the only advertisement of its kind which have found in the ladies' magazines of that perio The delicate wording and the implication of i suggestive title would hold their own against a modern rival.

TWO USEFUL TIMEKEEPERS.

WE have examined two inexpensive watches good appearance which may prove useful to t medical man both in private practice and for gene use. The first is a 30-hour stop-watch with le movement which is guaranteed for two years. T dial is graduated in one-fifth seconds, distinc marked, and has a long second hand by means which accurate pulse readings can be taken. T watch is made in a form suitable for placing on consulting room table or for carrying in the pock as well as for wearing on the wrist; the prices respectively 10*s*. 6*d*. and 15*s*. The second is appointments alarm watch, also with lever movem and a bell inside the back of the case, which ri for some twenty seconds and can be easily set "go off" at any time by moving a pointer to hour required. A reminder can thus be obtained an appointment or of anything which requires to done at an approximately fixed time. This watc guaranteed for three years and is sold at 25*s*.

The watches can be obtained from Messrs. Arn and Co. of 122, St. John-street, Clerkenwell-ro London, E.C.

NIETZSCHE.

A POCKET edition of Nietzsche's famous p poem, "Thus Spake Zarathustra," may find m readers in the medical profession. Speaking genera the state in which much of the world is to-day foreseen in this poem and in other works of "mad" philosopher. To assert 100 years ago t the world required a change of heart because code of morality formulated in Judæa 2000 y ago had proved entirely wrong, was to ask fo condemnation as an impious madman, and that the treatment meted out to Nietzsche, who certainly a difficult subject for classification. world looks now at things differently, and the altera of vision which commenced within the last hun and fifty years, and became more noticeable in middle of the last century, has been a much comm property since the war, and it is striking to find t Nietzsche himself, just before his miserable wrote "I shall be understood after the next Europ war." This new version[1] of his greatest work revision of the well-known translation by Tho Common, the editing having been undertaken Dr. Oscar Levy and Mr. John L. Beevers, the for of whom is the editor of the authorised translatio Nietzsche's works.

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[1] Thus Spake Zarathustra. By Friedrich Nietzsche. Tr lated by Thomas Common. Revised by Oscar Levy and J Beevers. London: George Allen and Unwin, Ltd. 1 Pp. 364. 5*s*.

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the kidney substance would indeed suggest that the initial injury had not been equally diffused.

Thus acute focal and diffuse forms may well have a common causation, and the differences between the two forms are only a matter of degree.

NEPHROSIS.

The distinction between chronic glomerulo-nephritis and "genuine" nephrosis is still less well defined, while the similarity between these groups is very striking. Elsewhere [5] I have expressed the opinion that there is no justification for separating off a group of cases as "genuine" or "lipoid" nephrosis, but as this conception still holds sway in many quarters, certain aspects of the argument are worth repeating and extending. I would here quote from Leiter's [6] review of the subject:

> "The nephrotic syndrome seems to be well established clinically and pathologically as something not directly related to glomerulo-nephritis or inflammatory renal disease, though commonly associated with it. In its *primary*, uncomplicated form, this syndrome is known as nephrosis and is a rare *disease*. The rarity of this disease, however, is no justification for the denial of its existence." (I have rearranged the italics.)

In brief, the main features of nephrosis comprise a chronic degenerative lesion of the renal epithelium in which glomerular change is slight or invisible, a prolonged course marked by œdema and the absence of hæmaturia, hypertension, or nitrogen retention, and the occurrence of heavy albuminuria. The albumin to globulin ratio in the urine is about 20 to 1, and if this is compared to the albumin to globulin ratio in the plasma (viz., 2 to 1) it is easy to realise that the proteinuria leads to a relative depletion of the plasma albumin. The plasma, apart from low albumin content, often contains an actual increase in globulin and fibrinogen content, and this has been explained by the results of plasmapheresis experiments in which it has been shown that fibrinogen and globulin are more easily regenerated in the plasma than albumin. Thus ensues a lowering of colloidal osmotic pressure from the loss of albumin and this is not balanced by the increase of globulin, for this protein with its greater molecular weight has relatively a smaller effect. The normal colloid osmotic pressure of the plasma is about three times the capillary blood pressure, but in these cases it often falls to below this latter value. This change is probably the main cause of the anasarca, which though a principal feature of the disease, is relapsing in character and may be absent for long periods. Clearly, considerable plasma albumin depletion can occur before the colloid osmotic pressure is sufficiently lowered for this cause of œdema to be operative. Changes in sterol metabolism occur including gross hypercholesterolæmia, increase of cholesterol ester content of the kidney, and increased cholesterol excretion in the urine. There may also be a lowered basal metabolic rate, even in the absence of œdema, and often a moderate degree of leucocytosis.

Now all these features are frequently seen in cases of subacute glomerulo-nephritis or large white kidney, but in these cases the period in which the clinical and metabolic state is indistinguishable from the above described syndrome may be preceded or associated with slight hæmaturia. Later, however—it may be months or years—as the renal changes progress towards sclerosis, the picture changes, the tendency to œdema vanishes, the hypercholesterolæmia returns to normal, and hypertension and nitrogen retention appear, though not necessarily simultaneously. With hypertension may follow rapidly advancing changes in the fundus oculi and in the size of the heart, and when persistent nitrogen retention is obvious the case is approaching death in uræmia. Sometimes a gross nitrogen retention passes off for a time, but it almost always recurs, and the ultimate end seems unavoidable. Both in such cases of subacute glomerulo-nephritis with the so-called nephrotic tendency, and in so-called genuine nephrosis a large proportion of cases manifest as a usually fatal complication, pneumococcal o streptococcal infections, more commonly a peritoniti but sometimes an empyema or an erysipelas. Thi is well shown in the cases reported by Fahr.[7]

The fate of cases described as genuine nephrosis still somewhat doubtful. Some cases undoubtedl recover, but the majority die with septic infectior as just described. "True uræmia never occurs, says Leiter [6]; but then of course the case would n be one of "genuine" nephrosis, by definition!

The general clinical similarity of "genuine nephrosis and some forms of subacute glomerul nephritis is indeed very close, the differences a sometimes very little, and it is possible to find series of cases of subacute glomerulo-nephri presenting to an increasing degree the nephro syndrome. *Such cases have been termed* nephr with nephrotic tendency (nephrotische Einschl *and are considered by some authors* as a mixture two diseases or disease processes (Murphy Warfield [8]). Recent reports of cases of "genui nephrosis are so scrutinised by critics that the l departure from the definition of *the disease* is s cient reason to relegate a case from the group nephrosis to that of nephritis, and a blind ey turned to the overwhelming degree of similarity— Murphy and Warfield's [8] criticism of some of Dyk cases, and Leiter [6] on Bell.[10] It is, in fact, diffi to find cases which satisfy all criteria, and such c as do so are almost always cases which have ei recovered, or terminated, as it were accident *from an infection.* *What* would happen if infec did not occur is yet to be discovered. It is impor here to note that the cases of glomerulo-nepl which present at some time the nephrotic synd in purest form are those cases which have the lo course and greatest chronicity.

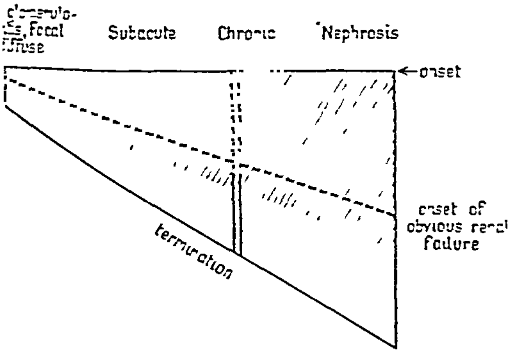
The argument for including nephrosis in the g of glomerulo-nephritis has been detailed from clinical and histological view-points by Christi and by Bell.[10] *The latter demonstrated by* a bea technique the histological relationship of nepl and glomerulo-nephritis. The histological cha which characterise "genuine" nephrosis, an al pure epithelial degeneration, equally occupy picture in the early stages of subacute glome nephritis, even if more definite inflammatory cha in varying degree, are present as well. Bei and co-workers [12] find no adequate reason for tinguishing between the three cases of nepl reported, although one died in uræmia with a l logical picture more resembling nephritis. say that the separation of this case from the ot suggested on anatomical grounds, "becomes ill and insufficient when all aspects of the case fully reviewed."

Lohlein [13] and Bell [10] believe that nephros only an example of chronic glomerulo-neph whereas Elwyn [14] *thinks that nephrosis fo* acute diffuse glomerulo-nephritis. The former that nephrosis is part and parcel of glome nephritis, seems to me the only possible explana and it is quite unnecessary to assume that i yn suggests, a sequel of an acute diffuse tis which has healed atypically leaving purely rative processes.

CAL NATURE OF ALL FORMS OF TOXIC NEPHRITIS.

iscussing the relationships of different forms merulo-nephritis confusion arises from the use terms acute, subacute, and chronic; sometimes terms are used in the sense that a chronic bacute process may follow an acute one, imes in the clinical sense of the duration of sease, sometimes as an index of the severity inflammatory process in the kidney. It seems simplest to use these terms as signifying rate gress of the disease, by which means one becomes ndent of such an extremely variable figure as tual duration. Each case appears to have an ge rate of progress, whether considered from ical or histological point of view, and it is hat determines the "type" of the case, but of the actual rate varies at times by exacerba- r quiescence.

elieve that "genuine" nephrosis and all forms omerulo-nephritis are essentially of the same e and are caused in a similar manner (even h the activity and nature of the actual causal may be different), and that the difference en the various groups is mainly one of degree. mined by the average rate of progress of the e. Each and every case tends, as a case of phritis," towards renal failure evidenced by gen retention and hypertension and on each is superposed a variable amount of the phrotic" syndrome, with its metabolic changes sequel of proteinuria. In acute forms of nephritis nephrotic syndrome is hardly manifested at in less acute forms this syndrome becomes easingly apparent but overlaps in varying degree more obvious signs of renal failure. In chronic s the nephrotic syndrome occupies to a large ree, or entirely, the whole clinical picture, and nary signs of nephritic failure may never appear use the cases either die of infection, or recover. re such can occur. In other words "genuine" hrosis can only occur when the underlying hritis is so mild that renal sclerosis and its ptoms do not complicate the development of nephrotic process. This conception can be sented diagrammatically as shown.



shaded area represents the addition of the nephrotic syndrome.

The ordinates represent in a rough way the duration the disease, and different cases can be represented narrow vertical columns. The classical groups are sented by the headings, no lines of demarca- n being drawn between them. The scheme demonstrates the transition from one end of the scale, representing acute hæmorrhagic nephritis of relatively short duration, to the other end, representing the more chronic forms in which, for reasons already given, the nephrotic syndrome comprises almost the whole or the whole of the picture.

The "metabolic" addition of nephrosis is represented in values which gradually increase as the duration of the renal disease allows its more complete development. Each case presents a progressive loss of renal function, though not necessarily an even progression, till below the dotted line the renal failure becomes obvious by the coarse manifestations of nitrogen retention and hypertension. In acute cases the clinical picture is dominated from an early stage by this "nephritic" syndrome, in subacute cases this syndrome appears later but generally overlaps more or less whatever degree of the "nephrotic" syndrome that is present, in the most chronic cases coarse renal failure *follows* the nephrotic stage if the development of the case has not been interrupted by death or recovery.

Below the dotted line the scheme suggests that gross loss of renal function in the most acute and in the more chronic forms is identical in nature and uniform in effect, whatever may be the activity or nature of the toxin (assumed or known), and whatever may be the histological changes present.

Cases which are widely separated in the scheme may well have an identical causation. Excellent examples of this were seen in trench nephritis. Here, some cases were marked by fever, hæmaturia, and slight œdema, others were less sudden in onset, had little hæmaturia, but anasarca and a more prolonged course provided the main features. "The general manifestations of the disease—epidemic occurrence, generally febrile onset, bronchitic phenomena, frequent splenic enlargement—all point to a primarily infectious origin of the disease" (Fishberg[15]). It must be very probable that, whatever may have been the predisposing causes of such an epidemic, the infecting agent was unique yet it could produce glomerulo-nephritis of such different types.

These considerations compel us to look for some unity in the cases, however much the outward manifestations differ; and by a mental exclusion of the nephrotic addition, such unity is clearly shown in this scheme, whereby the differences are emphasised as a matter of degree, and an expression of the average rate of progress—this being probably the resultant of the intensity or activity of the toxin and the humoral and tissue resistance.

Probably the best examples of "genuine" nephrosis have been presented by cases of luetic origin. These do not need separate classification for, in accordance with our knowledge of the extreme chronicity of processes due to such infection, renal change would be expected to be equally slow, so slow in fact that measurable loss of renal function is rarely demonstrated. Yet even here a case I have observed presented a retinitis albuminurica at about the time of the abatement of an anasarca which had lasted thirteen months. Complete recovery occurred in this case even though a fresh luetic infection was acquired soon after his discharge from hospital.

In terminal stages of the disease, hypertension results in arterial and arteriolar changes, retinitis, and enlargement of the heart. The two former of these changes can be produced sometimes so rapidly that it is difficult, in the absence of further proof, to believe that they are expressions of increased mechanical strain acting solely, but that, in some other way, the renal lesion must be responsible therefor. However it may be produced, advanced vascular changes may alter the histological picture and produce, as it were, an added ischæmic nephritis.

In the diagram one column is partly represented by dotted lines to correspond with the initial stages of the disease. Such cases are those of small white kidney, or secondary contracted kidney, or nephritis repens (Russell [1]). As a rule these cases are observed only in terminal stages, the initial stages are so devoid of symptoms that the patient often fails *to note the onset of the disease. If œdema is absent*, hæmaturia and albuminuria can easily be overlooked. In such cases the loss of plasma albumin is probably insufficient to lower the colloid osmotic pressure below the capillary hydrostatic pressure; it is to be remembered that normally there is a large margin in the excess of the former, and as a result the sum total of the factors which produce œdema do not reach a sufficient value. In other respects these cases in no way differ from neighbouring cases in which œdema has been present, except perhaps in the consequent lack of treatment. These cases proceed to advanced changes in the renal structure in which the final fibrotic processes may be patchy (reticular) or diffuse. The terminal stages are often complicated by severe ischæmic nephritis.

It is to be noted that every case of toxic nephritis is essentially azotæmic, and that the superposition of "nephrosis" in sufficient degree provides the so-called hydropigenous forms. Clearly then it is useless to divide nephritis into azotæmic and hydropigenous forms.

PROGNOSIS.

The prognosis of toxic Bright's disease confronts us with difficult problems. At the one end of the scale the acute and grossly hæmorrhagic forms present an exceedingly good outlook, recovery occurring sometimes very quickly and sometimes a matter of months. Occasionally the treatment of sepsis—e.g., by removal of septic tonsils—seems to be necessary, and the temporary exacerbation of symptoms which so often follows suggests a correct location of the cause. However, as one proceeds along the scale to less acute and chronic forms, the ultimate prognosis seems to be much more grave. Cases which manifest definitely the nephrotic syndrome, apart from the risk of death from infection, show progressive renal destruction, and a termination in uræmia. The prognosis of the "pure" nephrotic cases has already been suggested.

These prognoses are very puzzling, for apparently the less active processes of subacute forms present a worse outlook than that of the most acute cases. This does not appear to be the effect of the "nephrosis," for though Barker and Kirk [16] thought that renal changes could follow experimental depletion of plasma proteins, this has not been confirmed by Leiter.[17] Possibly the prognosis depends to a considerable extent on the persistence or disappearance of the causal "toxin." Acute nephritis following scarlet fever or acute tonsillitis is generally of excellent prognosis, as if the disappearance of the causal infection determines recovery. Nevertheless, though in some cases a toxin of streptococcal origin seems to be well evidenced as a cause in tonsillitis and scarlet fever, the existence of a toxin in other cases is merely assumed by analogy. Unfortunately we are not in a position to gauge the persistence or otherwise of the toxin, and the prognosis in an individual case can only be roughly guessed. Nevertheless the possibility of recovery is present in cases in which the "group" prognosis is usually bad. I would quote three such examples.

CASE 1.—Male aged 53. Œdema of feet appeared in December, 1926. Urine albumin +. No hæmaturia. B.P. 120/80. Œdema soon vanished but recurred at intervals for the next twelve months. Wassermann reaction negative. *By* June, 1927, there was a syst. B.P. 150, blood-urea 0·03 per cent.; a small hæmorrhage appeared in left retina in August, 1927, B.P. 180/110, and a month later there was definite "arterio-sclerotic" retinitis which by January, 1928, had become typical "renal" retinitis, with B.P. 210 syst., and blood-urea 0·037 g. per 100 c.cm In May, 1928, the B.P. was a little lower, there was some improvement in the fundi, blood-urea 0·06 g. per 100 c.cm. In November, 1928, the retinal changes had almost completely disappeared though albuminuria was still quite persistent. Since that date the retinæ only show slight vascular change, the B.P. has steadily fallen to a constant level of about 145/90, the albuminuria has progressively diminished, there is none at present, and during the past six months faint traces only have been occasionally detectable.

CASE 2.—Male aged 37. Œdema first noticed May, 1929, when the urine was found to contain a little blood and much albumin. The œdema steadily increased in amount (though not to anasarca) and persisted for two months. The urine albumin varied from 0·2 to 0·4 per cent. By the end of August, 1929, the albuminuria had vanished but soon recurred, there then ensued a steady increase of B.P., and from December, 1929, to February, 1930, was at a level of about 190/110. No nitrogen retention or change in the fundi. Since then there has been a steady fall of B.P. to 130/100 and the proteinuria has vanished completely. The urine now contains no cells or casts.

CASE 3.—Female aged 16. Swelling of face, ankles, and legs appeared Nov. 2nd, 1927. Albuminuria 0·9 per cent. Slight hæmaturia for a few days. Œdema persisted for three months, during which time plasma cholesterol reached a total of 0·37 per cent., syst B.P. varied between 90 and 122, no nitrogen retention occurred. Some leucocytosis during the early stages, total whites 14,840 with 72 per cent. polymorphs. Albumin-globulin ratio in urine 21/1. Tonsillectomy March 21st, 1928. Albuminuria thereafter diminished and there was only a trace detectable two weeks later, when she left hospital. Seen six months and eighteen months later; no evidence of nephritis could be detected.

The first case is somewhat astonishing, for the rapidly advancing vascular changes were so typical of a nephritis which had progressed beyond all hope of recovery, and yet in the past three years there has been progressive improvement (even if one hesitates to speak of cure), with regression of the vascular changes evidenced by the blood pressure and the retinal picture, and with disappearance of the albuminuria.

NOMENCLATURE.

It seems to me to be sufficient at the moment to describe one comprehensive group of toxic nephritis including a range of cases in which the whole picture varies from the mildest to the most severe affection. The terms mild and severe refer both to the nature of the histological changes and to the average rate of progress. Those cases advancing most rapidly and with the acutest type of inflammatory change are "severe," and those which progress most slowly and with the least acute type of inflammation are "mild." It is understood however that, in a clinical sense, the "mild" cases may present great dangers to life from the addition of the nephrotic syndrome.

Finally I would draw attention to two problems. The first is in respect of the disappearance of the nephrotic syndrome in the later stages of nephritis, for when vascular changes and gross nitrogen retention appear the tendency to œdema and the hypercholesterolæmia vanish. The disappearance of the œdema may be due possibly to diminished loss of tein, or to changes in capillary states, but even t is found later that the colloid osmotic pressure s rise above the level where œdema is likely to ear, it is still very difficult in our present state knowledge to suggest any working hypothesis explain the fall of the hypercholesterolæmia. e second, which has already been mentioned. he question as to whether there is a persistently ing toxin or not in progressive nephritis.

CONCLUSIONS.

Toxic nephritis is a disease in which progressive nges in the kidneys, of the most variable severity. associated with a clinical picture which presents mity, despite the differences which are due mainly the length of duration of the process.

From the most acute forms to the mildest forms, ery degree of severity can be found, and it is possible to find natural subdivisions.

"Nephrosis" comprises a clinical and metabolic drome which is superimposed upon all cases toxic nephritis, to a degree depending mainly the mildness of the nephritis and consequently the length of time available for this syndrome develop. The most nephrotic cases are those which the nephritis presents the mildest histo- gical changes and the slowest rate of progression.

All cases of toxic nephritis present a progressive s of renal function and tend to terminate in æmia. In the most nephrotic cases this change so slow that such cases die usually from inter- rrent infection, or recover, before loss of renal ction, as usually measured, is recognisable.

The nature of this progressive loss of renal function identical in all cases of toxic nephritis, whatever e cause and whatever the severity.

I wish to express my indebtedness to my medical olleagues at St. George's Hospital for their kindness n allowing me freely to study and observe cases of ephritis under their care.

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THE FLIGHT FROM THE "COTTAGE HOSPITAL."—To the several instances in which cottage hospitals have recently changed or proposed to change their name to general hospitals must now be added Bexley, in Kent. At the annual meeting at which the change was proposed it was stated that the institution was established "in the days of flannel poultices," and that in consequence of the volume of work the old name is now detrimental. One of the arguments in favour of the change of title to "Bexley and District Hospital" was that larger subscriptions might then be expected from societies "which very often do not look very highly upon cottage hospitals." The matter was remitted for further consideration.

SPONTANEOUS SUBARACHNOID HÆMORRHAGE.*

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SUBARACHNOID hæmorrhage has long been known as an occasional cause of death. From time to time fatal cases came to autopsy in which there had been no injury, and no disease sufficient to explain the bleeding was found. Until lumbar puncture came into general use, however, that is to say the last 15 or 20 years, it was not general knowledge that subarachnoid bleeding not infrequently occurs without causing death. It is true that such an event had been observed. Thus, Gowers,[1] writing in 1888, three years before Quincke introduced lumbar puncture, says: "In slight cases (*of meningeal hæmorrhage*) recovery is possible, as subsequent post-mortem has proved." To-day, thanks to Quincke's work, in all forms of meningeal disorder the condition of the cerebro-spinal fluid can be ascertained at the time of the symptoms and the two thus readily correlated. This has done for the meninges what laparotomy has done for the abdomen; it has made a dark place light, facts have replaced fantasies.

One of the results is that we have now a clear and easily recognisable clinical picture of what is called spontaneous subarachnoid hæmorrhage. This may occur at any age. It has been seen in quite young children, and in elderly persons; it is however most common in early adult life before the blood-vessels have begun to undergo the changes of later years. The person affected is usually in excellent health at the time, and in many cases there is no history of previous illnesses or of any symptoms pointing to head trouble at any time. In a certain number of recorded cases, however, there is a history of head symptoms of various kinds from time to time; this will be referred to later.

The onset, as might be expected, is usually sudden. The patient may fall down unconscious and may remain so until death. As a rule, such unconsciousness usually passes off sooner or later. If there is no actual loss of consciousness the onset takes the form of severe pain in the head, usually in the occipital region. Some patients say that it felt as though they had been struck a violent blow, others, as though something had snapped inside. Sometimes it is less severe at first and soon increases so as to make the patient cry out.

In addition to headache there is usually recurrent vomiting of cerebral type. There is often more or less confusion. There may also be restlessness and general pain. At times the patient is strange in manner and resents interference. A slightly raised temperature which in some cases persists for several days is common. Where there has been a primary loss of consciousness this may pass off in a few hours, leaving the patient confused and complaining of headache and sometimes of pain in the limbs. The pupils may be dilated, contracted, or unequal. There is, as a rule, no paralysis and no sensory change, but hemiparesis or ocular palsy may occur. The condition of the reflexes varies. The knee-jerks may be normal, increased, unequal, or as in one of my cases *absent for several days*. The *plantars may be normal*, or they may show toe extension on both sides or flexion on one and extension on the other. In one of my cases there was in each foot perfect flexion when the inside of the sole was stimulated, and equally perfect extension on stimulating the outer side. Kernig's sign may be present on one or both sides or it may be absent. The urine often contains a trace of albumin. Sometimes there is a large amount. This so-called "massive albuminuria" is not common. When present it is often misleading as it suggests uræmia, with which these cases have certain points of similarity. It usually disappears in a few days, and as was shown in a fatal case which I saw in 1929, the kidneys may be found to be normal at autopsy.

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* Read before the Sheffield Medico-Chirurgical Society, March 31st, 1932.

The fundi may show characteristic changes of great diagnostic value. Intra-ocular hæmorrhages, into the retina or vitreous, or more rarely, choked discs, may be present. Riddoch and Goulden[2] consider *that these are due to distension of the subarachnoid* space round the optic nerve, with separation of the dural and pial sheaths, causing raised pressure and traction on the vein, and sudden interference with the venous return. Epileptic attacks may accompany the bleeding. Their occasional occurrence during the illness, without evidence of further bleeding, will be referred to later.

In a case presenting the more constant of the above features, a diagnosis of subarachnoid hæmorrhage may usually be made with confidence, and lumbar puncture is indicated at once. As a rule the fluid is found to be at a somewhat increased pressure, and to contain blood in variable quantities. That the blood is not merely due to injury by the needle must be made certain in the usual way by noting that the blood is equally present in three separate lots of fluid, by the absence of clotting, and by the supernatant fluid being blood stained.

Although this condition is often spoken of as "spontaneous" subarachnoid hæmorrhage, yet it is not always quite without an immediate cause, in the form of some increase of excitement or of muscular activity. This may be so slight as to be hardly recognisable, or it may be quite definite, although something less than actual trauma. That there should be an immediate cause is not surprising. If, as is so often the case, it is due to the rupture of an aneurysm, the actual burst is only the culmination of a gradual process of giving way, with coincident attempts at repair. There may be no symptoms until the last defence has broken down. Even then it may be only a minute oozing, perhaps best described as "leaking." In other cases it may be much more than this.

Progress.

The first attack may be very severe and prove fatal without even temporary recovery. On the other hand the onset may be severe with complete loss of consciousness, and after a few hours, or even less, the patient begins to come round. What happens then depends on circumstances. There may be no further bleeding with gradual recovery. On the other hand, further bleeding is liable to occur, which in turn may be recovered from, or may be of fatal severity. Even if kept at absolute rest in bed recurrences may occur, depending on the conditions inside the skull.

Symonds[3] has made a useful division of these cases into four groups according to their severity.

Group 1.—Sudden large hæmorrhages causing apoplectiform effects which go on till death sooner or later.

Group 2.—Initial apoplectiform onset, gradually changing to mental confusion and recovery or possibly death from a further attack.

Group 3.—Milder onset without coma, either getting gradually more severe or improving.

His fourth group is more or less hypothetical and need not concern us here.

The following case is an example of Group 1. It occurred before the days when lumbar puncture was a routine procedure.

CASE 1.—A man of about 40 years, whilst playing in a cricket match, hit a "four" and immediately fell down unconscious. He was admitted to the Sheffield Royal Hospital on August 20th, 1904. On admission he was unconscious and remained so until death. There was stertorous breathing. No squint. Pupils equal, medium size. Conjunctivæ sensitive. No evident hemiplegia. Moved both arms slightly at times. Knee-jerks present both sides —also toe extension. No superficial reflexes obtained. There was a trace of albumin in the urine. He died on August 25th, the sixth day.

At *autopsy* an aneurysm the size of a small pea was found on the left anterior cerebral artery. It had burst in front and the blood had ploughed up a rounded cavity in the ventral surface of the frontal lobes about 2·5 cm. in diameter. The right was more excavated than the left. It had destroyed the lower part of the genu of the corpus callosum, pushed back the anterior white commissure and just reached on each side to the floor of the lateral ventricle; on the left *side it had actually penetrated the ventricle*, but there was only very little blood in the ventricles. The chief spread of blood had been along the subarachnoid space, tracking widely over the whole surface—more on the left side than on the right. There was also atrophy of the right kidney, due to an impacted ureteral calculus, but no evidence of chronic nephritis or arterio-sclerosis.

In this case the immediate determining cause was undoubtedly the very considerable muscular effort of hitting a "four," but up to the time of its rupture the aneurysm had shown no signs or symptoms of its existence. Its site is the common one for this type of aneurysm—namely, at or about the junction of the anterior and middle cerebral arteries.

The next two cases come under Group 3.

CASE 2.—On April 21st, 1931, a single woman, aged 35, apparently in excellent health and full activity, on her way home at night had run to catch a tram, and then mounted to the upper deck. Whilst sitting there she suddenly felt an intense pain in the back of the head, neck, and trunk. She had a very restless night owing to pain and vomiting. Temperature 100°. Next morning I saw her with Dr. Paige. The pupils were unequal; the neck was stiff and movement caused pain; the reflexes were normal; there was definite Kernig's sign on both sides. There was a good deal of nervous alarm, but no real mental confusion. Lumbar puncture showed an increased pressure and the fluid considerably blood stained.

She gradually improved in every way, but on April 27th, that is the seventh day, she had more pain in the head and vomiting recurred during the next 24 hours. Kernig's sign, which had practically disappeared, was again marked on both sides and she complained of pain going all down the spine in a quite unusual way. From that time onwards she made a steady recovery and is to-day in her usual health.

This was a typical mild case. The most interesting feature was the return of pain and vomiting on the seventh day. It naturally raised the suspicion of further bleeding, but as it subsided quickly it seemed more likely that the increase of symptoms was due to the changes taking place in the blood already in the meninges, and the possible irritant effects of products of metabolism on the highly sensitive membranes. The question of a further lumbar puncture arose, but as thè symptoms subsided in a few hours it was not considered necessary.

The cause of exacerbations during the progress of a case is of considerable interest. It is natural to suspect further bleeding, and this sometimes occur even in non-fatal cases, but it is not ys so.

somewhat similar exacerbation was seen in the case also.

se 3.—This was a married woman, aged 25. She not had any previous illnesses. About the end of mber, 1926, whilst stooping down to put some coal on fire, she felt something "snap" in the back of the . This was immediately followed by intense pain from back to the front of the head. She turned faint and to be carried to bed. Severe vomiting occurred for next hour or two. The pain was very severe in the tal region for the next few days, and she had to keep head upright. If she moved it to either side she said felt as if it were full of liquid." During the next two ks she improved, but on Jan. 16th, just before dinner, had a severe epileptic fit, followed by intense headache k and front and severe vomiting.

was asked to see her on Jan. 27th—that is about 21 or ays after the original attack (they were uncertain as to date)—and 11 days after the exacerbation with the eptic fit.

n Feb. 2nd she consulted Dr. Collier—lumbar puncture done by him on that day—that is, 17 days after the erbation, and between 27 and 34 days after the original ck. He tells me that the cerebro-spinal fluid was then a faint primrose yellow colour that it could only be gnised in a strong light. Had there been a second orrhage on Jan. 16th it is probable that the fluid would e been more coloured than that. Froin (quoted by onds[3]) records a case in which the cerebro-spinal d from a non-fatal case (of Group 2 type) showed formly yellow on the seventeenth day, and very slightly ow on the thirty-third day. It seems, therefore, more bable that the exacerbation of symptoms with an epileptic ack which only occurred 17 days before lumbar puncture not been due to further bleeding.

r. Collier, in a private communication, also tells me that les occurring at onset epileptic attacks during the time recovery possibly due to absorption of the blood are very rare, and that, in his opinion, actual recurrences leeding in these cases are probably not so common as they thought to be. It has not been possible to follow up case.

That recurrent bleeding may occur within a few ys, even more severe than the initial attack and end in recovery, is suggested by the next case:—

CASE 4.—On Jan. 10th, 1928, I received an urgent call see a man, aged 36, who was unconscious and thought be dying. The history was that on Jan. 6th, whilst full health and vigour, he had suddenly been seized with intense pain at the back of the head. He got home with ulty, vomited several times and went to bed. Next the headache continued, the temperature was 100°, eyeballs felt tender, and his neck was stiff. On Jan. 9th, ugh still feeling ill, he got up and went downstairs. In evening he took some purgative pills. Next day he ayed in bed in the morning, got up to go to the closet, and ut midday was found comatose in bed. I saw him with . Greaves at 3.30 P.M., the breathing was noisy, irregular, d of Cheyne-Stokes type, the pupils were small; there s a divergent squint. The pulse was increased in quency and of low pressure; there was no Kernig's n; the legs were flaccid, slight toe extension on the right e; no response on the left; no knee-jerks were obtained. e diagnosis of subarachnoid hæmorrhage was confirmed lumbar puncture. The fluid flowed freely and was blood ined throughout.

During the next few hours the coma passed off. It was lowed by complete confusion, which with pyrexia tinued for about a fortnight. As the confusion inished he developed a condition resembling Korsakow's drome which persisted for several weeks and was a rce of great anxiety to his friends. It passed off pletely in time, and to-day, four years later, he is in tive work.

In this case there was a primary bleeding on an. 6th, and there can be little doubt that further eeding occurred on the 10th, that is, on the fifth ay. The effects on the second occasion seem too vere and too prolonged to be explained in any other way.

A second point of interest in this case was the olonged disorder of his mind. It simulated that en in alcoholic neuritis. For many weeks he had plete loss of memory for recent events, together with surprising powers of confabulation. Although apparently quite well in his general health, yet if asked what he had done the day before, he had not only entirely forgotten, but with perfect assurance, would describe entirely imaginary events in detail.

The occurrence of Korsakow's syndrome in this condition was first recorded by Goldflamm.[4] His experience is that it always clears up in time, and this case fully confirmed his view. Another point of interest in this case was the pain in the back of the eyeballs. Although no intra-ocular hæmorrhage or choked disc was found, it is probable that this pain was due to the distension of the subarachnoid sac around the optic nerve.

The next case, though by itself not in any way unusual, is of interest in connexion with the pathology of this condition.

CASE 5.—On Jan. 6th last I was asked by Dr. Norton Milner to see a single woman, aged 46. She had never had a day's illness since childhood. During the night of Dec. 27th she got out of bed and was heard to fall. They found her unconscious on the floor. By the time Dr. Milner saw her she had recovered consciousness but was confused, although able to answer questions. She had vomited several times. Temperature 100°. She complained of violent pain in the right side of the head. There were no abnormal physical signs. She was kept in bed and, except for the headache over the right temple, seemed to be improving. On Jan. 6th, about 3 A.M., that is 11 days later, she was again heard to fall, and again was found on the floor unconscious. This time Dr. Milner noticed a slight left facial paralysis.

When I saw her later in the morning she was quite rational and talked sensibly. She complained of pain over the right temple, and also told us that after the first attack she had had severe pain at the back of the neck and down her back. There was a slight left facial paresis, the grasp of the left hand was weaker than that of the right. The knee- and ankle-jerks on the left side were more marked than on the right, and although there was no definite toe extension on either side, yet while the response on the right was definitely flexor, that on the left was indefinite. No changes were seen in the fundi. There was a trace of albumin and the temperature was slightly raised. From the history alone a diagnosis of subarachnoid hæmorrhage was probable, and this was confirmed by finding the cerebro-spinal fluid uniformly blood stained.

Dr. Milner tells me that she made a steady recovery and is now in her ordinary health.

At the time that I saw this patient on Jan. 6th last, I was told by her relatives that her mother had a somewhat similar attack in 1913, and that I had seen her at that time. The following record of the mother's illness is from my notes taken at the time.

CASE 6.—On May 2nd, 1913, I saw her with the late Dr. Shea at Chesterfield. She was then 62. Five days before, on May 17th, she had suddenly fallen down unconscious and pulseless. There was severe vomiting; no local paralysis: pupils small and equal. She came round in about half an hour, complaining of intense occipital pain. Since then she has been more or less drowsy and stuporose. The urine is scanty and contains a little albumin. In the right fundus oculi there is a large hæmorrhage lying across and below the lower half of the disc, and another smaller one near the upper edge. The temperature is slightly raised. No paralysis or sensory loss.

At that date, nearly 20 years ago, the clinical picture of this syndrome was not familiar, and lumbar puncture was not a routine procedure. The case puzzled us a good deal, the diagnosis seeming to lie between uræmia and a cerebral thrombosis in some silent area. At any rate I made a special mark on my notes to follow up her after-history. Three years later, in 1916, I heard, to my surprise, that she had recovered completely without any paralysis and that the ocular hæmorrhages had cleared up. Again in 1924, that is 11 years after the attack, I was told that she was quite well. As a matter of fact she lived until 1930; that is for 17 years.

Here, then, is a clear instance of spontaneous subarachnoid hæmorrhage in two members of one family, mother and daughter. Both occurred rather later in life than is common in this type of case. The diagnosis in the daughter's case was made certain by finding blood in the cerebro-spinal fluid. In the mother this was not done, but there is not the least doubt as to the nature of her attack. Not only were the symptoms characteristic but the finding of intra-ocular hæmorrhages, which eventually cleared up, is almost as strong a confirmation as would have been the presence of blood in the cerebro-spinal fluid.

The question of a family tendency is of much interest in connexion with its ætiology. Gowers recorded its occurrence in two brothers. Dr. Greenfield in a private communication tells me of another instance, not as yet published, "in a woman of 54, whose daughter had died at the age of about 20 from what was thought clinically to be influenza, but was found post-mortem to be a ruptured cerebral blood-vessel." Another suggestive family series has been recorded by Goulden and Riddoch.[5] If, as is generally agreed, many of these cases of subarachnoid hæmorrhage are due to the leaking of a so-called "congenital" aneurysm, it would seem likely that from time to time more than one such would occur in the same family. Perhaps the term "developmental" or "familial" would apply more fitly to them than "congenital."

Some interesting observations have recently been made by Wiley Forbus [6] on the origin of these miliary aneurysms of the superficial cerebral arteries. In a case with multiple aneurysms in the circle of Willis, he found that all of these were situated at similar places—namely, at the point of the acute angle where there is a bifurcation. He also found that the walls of the aneurysms contained no tunica media. He then examined other arteries (from the same case) in which there was no aneurysmal dilatation, and found that in a number of identical positions there were similar gaps in the continuity of the tunica media. Similar gaps were also present at similar points in specimens from other cases of cerebral aneurysm, and also in the vessels from other persons in which there was no aneurysm at all. They were also found from time to time in the coronary and mesenteric arteries.

These defects of the muscular coat were only found at the points of bifurcation. They showed no signs of inflammatory changes, arterio-sclerosis, or external trauma. He therefore concludes that the actual aneurysmal sac is an acquired lesion arising from a congenital defect of the muscularis: that it is probably contributed to by a gradual degeneration of the elastic membrane, due to continued over-stretching of this membrane. In some the defect does not lead to aneurysm, in others aneurysm may be present, but it has not ruptured, whilst in still others it is the rupture of the aneurysm due to the defective muscularis that has caused the immediate symptoms. These observations of Forbus have been confirmed by Greenfield [7] in five cases of intracranial aneurysm.

It may be objected that in my two cases it is difficult to exclude arterio-sclerotic changes in the mother at 62 years of age. It seems even more difficult to imagine an arterio-sclerosis of such severity as to lead to a burst, yet causing no further cerebral symptoms for the next 17 years.

The next case, though in many ways similar, differs from the preceding in several respects.

CASE 7.—A single man, aged 28, was sent to me by Dr. Bellamy of Scunthorpe on June 5th, 1930. He had always been an active athletic man. On May 12th—that is about four weeks before I saw him—whilst boxing, he was knocked down by a blow on the head. This stunned him and was immediately followed by a violent headache and vomiting, so that he stayed in bed for the next two days. On the third day he got up and drove his car from Lincolnshire to London. The headache was still present and continued whilst he was in London for a few days. He then drove back again to Lincolnshire. On his return the headache and vomiting became much worse and he stayed in bed for five days. The exact history of the next few days is rather obscure, but he is sure that on May 20th and following days he was much better and going about.

Up to this point the history is not dissimilar to that of some of the slighter cases of subarachnoid hæmorrhage recorded above, except that there was a definite trauma, in the form of a blow, possibly sufficient to have caused actual bruising of the meninges.

On May 30th, that is 19 days after the original attack, the symptoms of which had practically disappeared for some days, he began to have severe pain in the back, thought to be lumbago. During the next two days it gradually got worse extending down both legs. On June 2nd he vomited frequently and frontal headache has been more or less constantly present ever since. He walked into my room on June 5th with considerable difficulty, the legs being very stiff. He complains of frequent cramps in the legs and cannot sit down in the ordinary way with the knees flexed, but has to stretch his legs straight out in front of him on account of the pain. He looked ill, but there were no abnormal physical signs above the legs. There were greatly exaggerated knee-jerks and well-marked Kernig's sign. In one foot there was a doubtful toe extension. No sensory changes; no sphincter trouble.

He was admitted to a nursing home, and in my absence Dr. Skinner kindly took charge for the next 24 hours. Lumbar puncture on the same evening showed no increased pressure, but the first sample of about 10 c.cm. was almost black, the second a deep red, and the third distinctly blood stained. None of the specimens showed any clot after standing an hour. A few hours after the removal of 30 c.cm. of cerebro-spinal fluid the pains in the back and legs became definitely less; and during the next few days disappeared together with Kernig's sign. On June 16th a second lumbar puncture gave primrose yellow colour, with no increase of pressure. He was kept in bed for some weeks and made a steady and uneventful improvement. In July he was practically convalescent. I saw him again about a year later when he was perfectly well in every way.

The complete data for an exact reconstruction of the events in this case are wanting. Whether or not there was a subarachnoid hæmorrhage following the blow on May 12th must remain uncertain. The symptoms and course are consistent with such a view, but unfortunately lumbar puncture was not done. At any rate, whatever it had been, the immediate effects had passed off by May 25th, for he was then and for the next few days going about and felt quite well. It seems clear therefore that the blood found in the spinal theca on June 5th was not there during those days, and that it did not begin until May 30th when the lumbar pain first made its appearance. The condition of the cerebro-spinal fluid on June 5th, which was still definitely red in colour, is consistent with this. Judged by Froin's findings it would be "red" with a hæmorrhage seven days before, but not with one three or four weeks old. On this assumption, everything points to the seat of this bleeding as intraspinal rather than intracranial, and distinct from the original one following the blow. The complete absence of head symptoms at the onset of the lumbar pain supports this. The headache and vomiting which followed in a day or two would be due to the general irritation of the meninges. If this explanation of his illness is correct, it suggests that this man has some tendency to spontaneous meningeal bleeding not limited to one place, and therefore probably not a "leaking aneurysm." This is supported rather strikingly by his previous history. He says that on quite a number of occasions when playing Rugby football he had been knocked out, suffering from concussion and being laid up in bed for some days with head symptoms. Also that following a motor-cycle accident a few years e was diagnosed as having a fractured base. l, his family were so used to his severe head oms after an injury that they were not unduly ed at the effect of the boxing knock-out in nd did not pay special attention to it.

ntaneous subarachnoid hæmorrhage of intra- origin is very much more rare than intra- l. It does occur from time to time. Michon[8] s two cases and gives an account of some of previously recorded. Amongst these, one of bears some resemblance to my case. This was led by Rénault and Foix.[9] A man, aged 25, suddenly with severe pains in the back and ke double sciatica. On the tenth day the pains still present, together with stiffness and weakness e legs, Kernig's sign, headache, and slight fever. ar puncture on the twelfth day showed blood- d fluid and relieved the pain. He made a lete recovery.

Treatment.

e treatment of subarachnoid hæmorrhage is sarily similar to that of other deep-seated ings which cannot be directly reached. There however, special circumstances arising from its ty which call for certain modifications. In ningeal hæmorrhage, the danger is not of syncope excessive loss of blood, but of fatal intracranial ure from a comparatively small amount. Thus, t absolute rest in bed is essential, it is not sary for the patient to be laid flat, indeed it is r that he should be propped up more or less ding to whatever position he finds most comfort- Whether conscious or unconscious, a free return ood from the head is of primary importance.

regards movements likely to be harmful. The nt will probably not move his head much because ne pain or vertigo which it causes. The other ular movements likely to be most harmful are acts of sneezing, coughing, vomiting, straining. ar as coughing and straining at stool are concerned, should be prevented or controlled by ordinary le measures.

hilst no unreasonable restrictions should be placed hanging the position of the limbs and trunk from e to time, actual getting out of bed under any umstances must be absolutely forbidden. This tment should be continued for the first few days only relaxed in stringency very gradually, vided no further symptoms arise.

umbar puncture is always indicated for the purpose diagnosis, and to relieve the pressure if raised. to whether this should be repeated for purposes of tment, and, if so, how often, there are differences opinion. Some whose views must carry weight ocate repeated puncture at frequent intervals order to remove as much of the effused blood as sible. Others consider that repeated puncture is only uncalled for, but may be actually harmful disturbing the conditions at the seat of hæmor- ge, and even endangering further bleeding. Seeing distance of the site of lumbar puncture from the t of bleeding in the skull, and the nature of the necting channels, such a danger seems remote. ainst repeated puncture as treatment is the comfort and disturbance that it causes, and the t that many cases recover without it. Most of se cases used to recover before lumbar puncture s heard of. Indeed, that is the very reason why eir true nature was not recognised.

Of the seven cases here recorded, six recovered mpletely without repeated lumbar puncture. In ree it was not done until after the acute symptoms were over, whilst in two it was not done at all. One of the latter died. That he would have recovered had repeated lumbar puncture been used seems highly improbable seeing the severe and extensive damage found at autopsy.

In any individual case the question of death or recovery depends largely on whether the bleeding point is capable of firm closure or not, and this in turn depends on its size and surroundings. These cannot be known during life. My view is that, provided the patient is kept at rest, and lumbar puncture is done at the onset for diagnostic purposes, and incidentally to a sufficient extent to relieve any increased pressure at the time, it is unnecessary to expose the patient to the discomfort of repeated punctures, unless the pressure symptoms persist or get markedly worse. As we have seen, slight exacerbations may occur from time to time, as in Cases 2 and 3, but are probably not due to further bleeding, and disappear when left alone.

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CARDIAC IRREGULARITIES DURING CHLOROFORM ANÆSTHESIA.

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SHAW MACFIE LANG FELLOW IN THE UNIVERSITY OF EDINBURGH.

Soon after its introduction as an anæsthetic it was recognised that the use of chloroform was attended by some danger, and that fatalities were apt to occur from its administration. As long ago as 1858, in an analysis of a series of 50 cases of death under this anæsthetic, Snow[1] pointed out the special danger of "paralysis of the heart" occurring in the early stages of the administration. Since then numerous workers have confirmed and amplified these early observations, and in particular the work of Goodman Levy has thrown much light on the mechanism underlying the cardiac arrest in these cases.

Levy[2, 5] showed that in the cat, under low percentages of chloroform vapour, gross disturbances of heart action were common. These took the form of multiple ventricular extrasystoles, appearing in large numbers and arising from many foci. They tended to disappear with deepening anæsthesia, but when they were present it was comparatively easy to produce fatal ventricular fibrillation by any one of a number of factors. Stimulation of a sensory nerve, struggling by the animal, and administration of nicotine all favoured the onset of fibrillation, but most fatal of all was the administration during the anæsthesia of small doses of adrenaline.

When fatal cardiac arrest in man occurs under chloroform, its onset is frequently during the first few minutes of the inhalation: it is associated with struggling, and with light anæsthesia rather than with overdosage. It is also specially apt to follow administration of adrenaline.[6] It has been argued that such features point to the occurrence in man of the same ventricular fibrillation that Levy found to be so common a cause of death in the cat. There has never been complete conviction, however, that the results obtained from work on such an animal as the cat could be transferred *in toto* to man. Gill, for example, in a discussion on one of Levy's papers,[2] contrasts the effects of section of the vagus nerve in man and animals. The present position is probably accurately expressed by Parade [7] in a recent paper: "The conclusion is hardly to be doubted that in chloroform death ventricular fibrillation is involved, though the certain electrocardiographic evidence for man is lacking."

The results presented in this paper are the outcome of an attempt to follow electrocardiographically the effects on the heart of chloroform administration in man. While such observations under ether or gas and oxygen are comparatively common in the literature, I can find but four previously published reports on comparable studies in chloroform cases.

The earliest of these was a case reported by Ritchie [8] [9] in 1912, where records were taken by polygraph from a man of 19 years undergoing operation for femoral osteomyelitis. Thirty minutes after induction the pulse-rate rose to 227 per minute, and the jugular tracing showed waves at double that figure. This attack of probable auricular flutter gave way in three minutes to auricular fibrillation, and two minutes later there was return to normal rhythm at 125 per minute. Further progress was uneventful.

In a second case, reported by Hecht and Nobel [10] in 1913, ten electrocardiograms were taken from a girl of 6 years undergoing operation for mastoid suppuration. The operation lasted 30 minutes, and anæsthesia throughout was by chloroform. Beyond slight slowing of the rate, no change whatever was noted in the records.

The third reference is to a series of cases reported by Cluzet and Tixier [11] in 1919, of which six were under chloroform anæsthesia, all young and without heart disease. In all, marked cardiac slowing, even to half the original rate, was noted. In two cases there were frequent extrasystoles, negative in lead II. There was usually a slight diminution in the height of the "three main waves" of the electrocardiogram (? P.R.T., or ? R.S.T.). In their summary, the authors state that chloroform in the stage of muscular relaxation produces cardiac slowing and sometimes extrasystoles, but none of the serious electrocardiographic disturbances observed in the dog. (The changes referred to in the dog were described by Cluzet and Petzetakis [12] as "of the nature of heart-block, with pauses as in Stokes-Adams disease.")

Lastly, Unger and May,[13] in a paper dealing with avertin anæsthesia, refer to one case where chloroform was used. As no mention is made of any abnormality in the records, one may conclude that disturbances were absent.

It will be noted that in none of these papers is any light thrown on the interesting question of the behaviour of the heart during early induction.

MATERIAL AND METHODS.

Electrocardiograms have been taken in a series of 41 patients* undergoing major surgical operations. Thirty-seven of the cases were under general anæsthesia, chloroform being employed in 17. Though chloroform was only used throughout the operation in a few of these, in 16 the cardiac mechanism during the induction period under this anæsthetic was studied by string galvanometer. The other anæsthetics employed were ether, gas and oxygen, ethyl chloride, avertin, and in a few cases spinal anæsthesia or local infiltration with novocain. The ages of the patients in the chloroform group varied from 11 to 66 years, the majority, however, being about 60 (actual ages: 11, 15, 18, 25, 38, 38, 55, 56, 59, 59, 61, 62, 63, 63, 64, 65, 66). With one exception, all these patients, after a full clinical examination, were considered to have normal cardiovascular systems. The exception was a man of 65 years, with a history of palpitation, a slightly enlarged heart, and raised blood pressure (150/90 mm. Hg). The high average age of this group is due to the type of operation involved. Induction with chloroform is seldom used in these wards except as a preliminary to intratracheal ether, the anæsthetic of choice in such operations as excision of cervical lymph glands. It follows that practically all the chloroform cases were patients with enlarged cervical lymph glands, generally malignant, and the average age of the patients was therefore high.

The electrodes—silver plates, 6 in. × 1½ in., coated with silver chloride in the electrolytic bath—were bound to the patients' limbs with lint pads soaked in saline. Usually all three leads were available. Connexions to the string galvanometer about 150 yards from the operating theatre were by overhead wires; signals and telephone circuits were separately wired. Resistances generally were low, and little interference from extraneous currents was experienced. In the majority of cases the electrodes were applied and control records taken while the patient lay in the ante-theatre, before induction was started. The electrodes were left on throughout operation, and the fibre of the electrocardiograph was under constant observation. Records were taken at frequent intervals, and at once if changes in rate or rhythm were observed. Special points in the operative technique were indicated by signal, and records were taken during manipulation of viscera.

SUMMARY OF RESULTS.

The chloroform results only will be considered here, the results of the whole series being dealt with in greater detail elsewhere. The induction period with chloroform was observed or recorded 16 times. Of these, three cases showed no abnormality in the records, while three others showed merely minor alterations, such as bradycardia, or abolition of the P waves. In one case the rate increased from 115 to 160 per minute during induction, a sinus tachycardia without other change. In one other case the control records showed numerous ventricular extrasystoles, and records during induction and later in anæsthesia showed little change. But in the remaining eight cases, seven of whom had previously yielded physiological control records, marked disturbances appeared. One case, a boy of 18 with healthy cardiovascular system, developed marked sinus arrhythmia, with disappearance of P waves during the slow periods. This condition developed 12 minutes after the start of the administration, and lasted less than half a minute. It did not recur, and was not attended by any signs of clinical importance. In seven cases gross disturbances arose in the form of multiple ventricular extrasystoles. These varied in number from an occasional ectopic beat to as many as 146 in two minutes, and arose in some cases from many in both ventricles. Bigeminal and trigeminal is of coupling were common, and on occasion ı bizarre records as that figured (see Figure) ; obtained. In six of the cases the extrasystoles e during induction, in five spontaneously, and in after intentional vagal stimulation (carotoil pressure). In one case the appearance of asystoles was delayed until full surgical anæsthesia been reached, and in this case they recurred half an hour; but here there was definite piratory embarrassment. In all the others their earance was transient, and after a period of l disorder the heart settled, with deepening sthesia, to a normal sequential rhythm. The earance of extrasystoles in large numbers was netimes associated with struggling. It is notethy that *in none of these cases did the condition* the patient give rise to alarm. The pulse-rate certainly raised, but the colour and condition ained satisfactory, and administration of the esthetic continued quietly.

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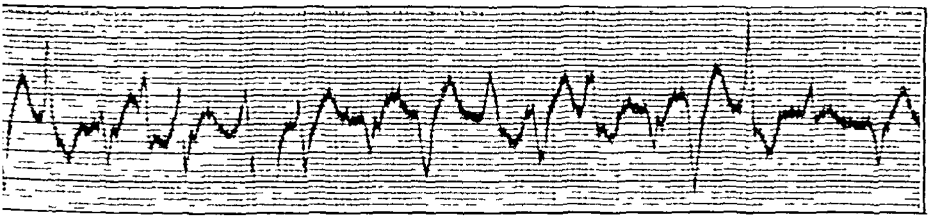

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The absence of clinical signs of failing circulation during the cardiac irregularities is at first sight surprising, but can readily be explained. Levy[16] has shown *that in animals* the blood pressure is well maintained during the period of complex ventricular tachycardia, and falls only with the onset of ventricular fibrillation. Collapse of the patient therefore is to be expected clinically only when the latter most grave condition has developed. Further, our tracings show that each extrasystole tends to be only slightly premature, forestalling the rhythmic sinus beat by 1/25th second or thereabouts; the pulse therefore is not noticeably irregular, and the full diastolic filling permitted to the heart allows the extrasystolic beat to discharge a volume of blood equal to a normal systole. This regularity and the well-sustained blood pressure may mislead the observer entirely as to the true cardiac condition of the patient, for there may be present the "multiple ventricular tachycardia" that is so regularly a precursor of fibrillation in animals.

Levy,[3] in discussing the relation of the ventricular tachycardia to fibrillation, states that:

> "Pending further light on this point it is possible to make the important statement that in every single instance of ventricular fibrillation induced by any of the methods I have employed, it has been preceded by a stage of complex ventricular irregularities, and that unquestionably the one condition leads on to the other, whatever their relationship may be. This observation is limited for the moment to conditions in which the heart is affected by chloroform,"

but he is careful to emphasise that not all cases of multiple ventricular tachycardia end in fibrillation. The tachycardia in cats may persist a considerable time and may then revert to normal rhythm, or "on occasion and on occasion only" may terminate in ventricular fibrillation.

The present records demonstrate the occurrence of this "pre-fibrillation phase" in man; it is a matter of good fortune that the graver disturbances did not occur in any case of the series. Since multiple ventricular tachycardia occurs in approximately 50 per cent. of cases anæsthetised with chloroform, it is easy to understand why the fatality-rate under this anæsthetic is so high. It must be emphasised that this stage of complex ventricular irregularity is not in itself serious or dangerous to the patient; its importance lies in the ease with which it may lead to fatal ventricular fibrillation. It is apparent that, *other things being equal, induction* with such an anæsthetic as gas and oxygen, which in our experience does not produce this condition, must be safer than induction with chloroform, which commonly does.

CONCLUSIONS.

Disturbances of cardiac action which generally elude clinical observation can be detected electrocardiographically during chloroform anæsthesia. They occur in about 50 per cent. of cases, and are of the nature of multiple ventricular extrasystoles. These on occasion may be very numerous, and the condition then resembles the "multiple ventricular tachycardia" so characteristically found in the cat, and well known as a precursor of fatal ventricular fibrillation. The danger of chloroform for induction probably lies in its tendency to produce these disturbances.

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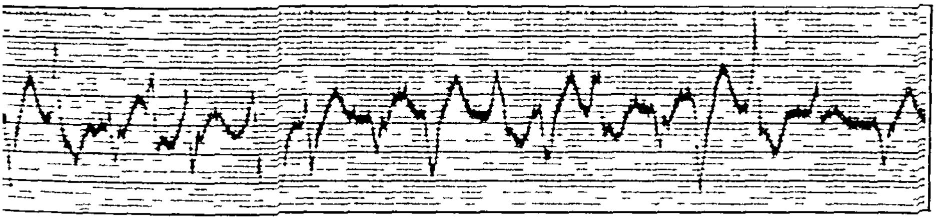

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DISCUSSION.

Frommel[14] has noted coupled rhythm due to ventricular extrasystoles in the guinea-pig during induction with ether, and Wachsmuth and Eismayer[15] describe two cases in man where, under ethyl chloride and ether, multiple extrasystoles appeared, in one case during induction and in the other during recovery from the anæsthetic. Chloroform therefore is not alone in producing such extrasystoles. But though not unique, chloroform appears to be much the most potent anæsthetic in causing these cardiac disturbances. Comparison of the results obtained from man with Levy's results from the cat shows the close correspondence between them. The nature of the disturbances, their relation to induction and struggling, their transient nature and disappearance with deepening narcosis, all are similar.

The absence of clinical signs of failing circulation during the cardiac irregularities is at first sight surprising, but can readily be explained. Levy[16] has shown that in animals the blood pressure is well maintained during the period of complex ventricular tachycardia, and falls only with the onset of ventricular fibrillation. Collapse of the patient therefore is to be expected clinically only when the latter most grave condition has developed. Further, our tracings show that each extrasystole tends to be only slightly premature, forestalling the rhythmic sinus beat by 1/25th second or thereabouts; the pulse therefore is not noticeably irregular, and the full diastolic filling permitted to the heart allows the extrasystolic beat to discharge a volume of blood equal to a normal systole. This regularity and the well-sustained blood pressure may mislead the observer entirely as to the true cardiac condition of the patient, for there may be present the "multiple ventricular tachycardia" that is so regularly a precursor of fibrillation in animals.

Levy,[3] in discussing the relation of the ventricular tachycardia to fibrillation, states that:

> "Pending further light on this point it is possible to make the important statement that in every single instance of ventricular fibrillation induced by any of the methods I have employed, it has been preceded by a stage of complex ventricular irregularities, and that unquestionably the one condition leads on to the other, whatever their relationship may be. This observation is limited for the moment to conditions in which the heart is affected by chloroform,"

but he is careful to emphasise that not all cases of multiple ventricular tachycardia end in fibrillation. The tachycardia in cats may persist a considerable time and may then revert to normal rhythm, or "on occasion and on occasion only" may terminate in ventricular fibrillation.

The present records demonstrate the occurrence of this "pre-fibrillation phase" in man; it is a matter of good fortune that the graver disturbances did not occur in any case of the series. Since multiple ventricular tachycardia occurs in approximately 50 per cent. of cases anæsthetised with chloroform, it is easy to understand why the fatality-rate under this anæsthetic is so high. It must be emphasised that this stage of complex ventricular irregularity is not in itself serious or dangerous to the patient; its importance lies in the ease with which it may lead to fatal ventricular fibrillation. It is apparent that, other things being equal, induction with such an anæsthetic as gas and oxygen, which in our experience does not produce this condition, must be safer than induction with chloroform, which commonly does.

CONCLUSIONS.

Disturbances of cardiac action which generally elude clinical observation can be detected electrocardiographically during chloroform anæsthesia. They occur in about 50 per cent. of cases, and are of the nature of multiple ventricular extrasystoles. These on occasion may be very numerous, and the condition then resembles the "multiple ventricular tachycardia" so characteristically found in the cat, and well known as a precursor of fatal ventricular fibrillation. The danger of chloroform for induction probably lies in its tendency to produce these disturbances.

This work was performed under the tenure of the Shaw Macfie Lang Fellowship of the University of Edinburgh. The expenses were in part defrayed by a grant from the Moray Endowment Fund.

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16. Levy: Chloroform Anæsthesia, London, 1922 (Fig. 2).

ADDITIONAL FACTORS IN THE TREATMENT OF LATE RICKETS AND OSTEOMALACIA.*

By Dagmar Curjel Wilson, M.D. Glasg., D.P.H.,
WOMEN'S MEDICAL SERVICE, INDIA (RETD.).

Introduction.—The incidence of late rickets and osteomalacia in northern India has been described, and it has been shown that in urban areas many patients live under social conditions which do not admit of adequate diet or sunlight, while in rural areas field-workers suffering from late rickets and osteomalacia, though obtaining sufficient sunlight, are not in an economic position to obtain an adequate diet.[1] All such cases need vitamin D as calcifying substance, and in its absence utilisation of calcium and phosphorus is impaired; in view of the very small amount of vitamin D often available it is necessary to ensure adequate intake of these minerals.

ADMINISTRATION OF CALCIUM PHOSPHATE.

Examination of the blood chemistry of cases of osteomalacia and late rickets in India has shown a low serum inorganic phosphorus which may be associated with a low serum calcium and tetany.[2]

The conclusion to be drawn from the data summarised in Table I. is that in field-workers living on a diet relatively deficient in vitamins A, D, and salts, the addition of calcium phosphate in doses of 1 drachm daily over a period of six weeks will cure or much improve the pain and deformity of late rickets and osteomalacia. (It has not yet been determined whether calcium or phosphorus is the preponderating missing factor in such cases.) But this treatment is unsuitable for crippled cases, whose condition does not permit of muscular and circulatory activity, or for those patients who are deficient both in diet and sunlight. (The persistence of tetany in some cases also shows that calcium is not made available for use in the body under these conditions.) In such cases the addition of vitamin D is also necessary for cure.

ANTIRACHITIC VALUE OF SUN-IRRADIATED YEAST.

The usefulness of the administration of dried baker's yeast (*Saccharomyces cerevisiæ*), after irradiation by ultra-violet rays in the treatment of various forms of rickets has been recorded by various observers in Europe and America.[3] In order to overcome the cost of imported yeast, and the difficulty attendant on its ultra-violet irradiation in India, the present communication describes the results of treatment with a dried yeast powder prepared in India from the various varieties of yeast left over in distillery vats after fermentation,† and irradiated for eight hours in direct sunlight.

TABLE II.

Results of Treatment of Patients Deficient in Diet and Sunlight (whose symptoms the previous use of a calcium phosphate salt had failed to improve), with 4 drachms daily of sun-irradiated powdered yeast from fermentation vats.

Degree of severity of clinical condition.*	+ + +	+ +	+	Nil.	Total cases.
Before treatment	7	6	1	—	14
After four weeks' treatment	—	4	8	2	14

* Classification as in previous records (2).

The patients (see Table II.) put on weight and their general nutrition was improved at the end of four weeks, but five additional cases who failed to take an adequate daily quantity of yeast did not show any alteration at the end of the experimental period.

The conclusion reached was that waste distillery yeast after sun-irradiation has value as a source of vitamin D in the treatment of late rickets and osteomalacia. It is suggested that such yeast may

TABLE I.

Results of Treatment with Neutral Precipitated Tri-calcium Phosphate in Daily Doses of grs. 45 to 60.*

Degree of severity of clinical condition †	Group 1.—DEFICIENT DIET.												Group 2.—DEFICIENT DIET + DEFICIENT SUNLIGHT.											
	(a) Patient active.						(b) Patient crippled.						(a) Patient active.						(b) Patient crippled.					
	+ + +	+ +	+	Nil.	Tetany present.	Total cases.	+ + +	+ +	+	Nil.	Tetany present.	Total cases.	+ + +	+ +	+	Nil.	Tetany present.	Total cases.	+ + +	+ +	+	Nil.	Tetany present.	Total cases.‡
Before treatment	3	10	1	–	2	14	2	1	–	–	2	3	7	6	3	–	2	16	2	1	–	–	1	3
After six weeks' treatment ..	—	—	5	9§	–	14	2	–	1	–	1	3	6	3	6	1	–	16	2	1	–	–	1	3

* Supplied by the British Drug Houses, Ltd. † Classification as in previous records (2).
‡ Plus five cases who ceased treatment on getting worse after three weeks.
§ Include three cases in latter months of pregnancy, when the condition usually becomes worse.

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* A survey of recent work under the Indian Research Fund Association.

† Process of manufacture.—Yeast left over in the vats after the fermentation of molasses has been completed is washed, passed through a press, and dried in the sun. It is then crushed in a disintegrator, using a very fine screen, and again rescreened in order that the product may be in the form of a fine powder.

o be useful in nutritional disorders due to deficiency vitamin B.

I am indebted to workers at the Lister Institute for vice regarding a suitable calcium phosphate preparation. d to the Medical Research Council for provision of sufficient ount of the salt for experimental purposes, and also to ss E. M. Hume and Dr. K. H. Coward for various ggestions regarding the irradiation of yeast.

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A full bibliography will be found attached to the following papers: Osteomalacia (Late Rickets) Studies, Part I., Ind. Jour. Med. Res., 1929, xvii., No. 2; Parts II.–IV., 1930, xvii., No. 3; Parts V.–IX., 1931, xviii., No. 3; Part X. (in the press).
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Clinical and Laboratory Notes

EFFECTIVE COUNTERACTION OF AVERTIN NARCOSIS.

BY WALTER P. KENNEDY, PH.D., L.R.C.P. EDIN.,
BEIT MEMORIAL RESEARCH FELLOW.

ONE of the main criticisms of the use of avertin as a basal anæsthetic is that owing to its rectal administration in one dose, empirically determined from the body-weight of the patient, it is not possible to control the further course of its action. The rapid absorption of the substance renders lavage of the rectum of no avail should it be desired to interrupt the anæsthesia. Naturally the first investigators directed their attention to the questions of antidotes and detoxication, and early experiments indicated that the administration of glucose or glycuronic acid might possibly prove effective, but this hope was not realised. Then acceleration of detoxication by means of thyroxin was attempted, and although preparatory administration of the hormone lessened the duration of anæsthetic sleep, the amount of the diminution varied considerably. In addition, the thyroxin had to be administered for several days prior to the operation as its effect is only slowly established, and this was sometimes attended with undesirable symptoms. The use of thyroxin in emergency operations, or in a sudden misadventure, complicating avertin anæsthesia, was impossible; and this avenue of detoxication was thus found to be impracticable.

Last year Killian [1] published the results of animal and clinical experiments on the possibility of interrupting avertin narcosis by means of coramine (pyridine-beta-carbonic acid diethylamide), a powerful analeptic, which had already been shown by Uhlmann [2] to have a stimulating effect on heart and circulation, and an even greater effect on respiration, and the central nervous system in the sense of breaking through induced narcosis. Quantitative animal investigations showed that in respiratory failure under large doses of avertin, coramine was superior to 10 per cent. CO_2, and that if small doses of coramine were administered, subsequent exhibition of CO_2 was effective in stimulating respiration though it had previously failed. In man either one or two injections of 2–3 c.cm. coramine intravenously interrupted light anæsthesia immediately, and restored memory right back to the time of administration. The injection must be administered slowly, otherwise transitory hiccough or a tendency to vomit may appear. Intramuscular administration was also effective but slower in its action, the full effect not being attained for 15 or 20 minutes. In all the cases of deep anæsthesia tested, two intramuscular injections of 3 c.cm. coramine solution 50 per cent. (that is double strength) resulted in the rapid awakening of the patient. The toxicity of coramine is very low, and doses very much in excess of these would be required before any ill-effects were produced. Mörl [3] has since confirmed Killian's results and described a case of serious respiratory failure under avertin in which CO_2 was of no avail but where 3 c.cm. coramine intravenously restored the patient immediately. This case was complicated by advanced disease of the lung.

An extensive experience of avertin basal anæsthesia has been gained in this clinic, and the results of 1000 cases have been published (Young [4]). Since this paper appeared a further 350 cases have been added to the series, and in these equal success has been attained. There have been no fatalities which could be ascribed to the anæsthetic. As previously stated, in a number of instances the great fall of blood pressure and coincident considerable rise in the pulse-rate occasioned some misgiving at first, but detailed investigation showed that this had no serious significance, and that the circulatory disturbance could be readily controlled by hypodermic administration of ephedrine. It was remarked that even in these patients who showed the most marked drop in blood pressure the colour remained good. In a small proportion of cases the depression of respiration was more obvious than that of the circulation; breathing grew slower and more shallow, the face becoming cyanosed although an airway was used. The first inhalation of ether often produced a marked and immediate improvement, and 5 per cent. CO_2 in oxygen rapidly relieved those patients who were not restored by ether (Kennedy[5]).

The appearance of Killian's paper suggested an even more useful antidote; he emphasised the superiority of coramine over CO_2, especially when the degree of respiratory failure was advanced. We therefore adopted the procedure outlined by him in a number of cases, using smaller doses, since complete interruption of the anæsthetic was not desired, and found it to be very efficacious.

The usual dose given was 2–3 c.cm. intramuscularly. This was followed by rapid improvement in colour and deepening and acceleration of the depressed respirations. The slack jaw muscles stiffened, and the jaw no longer had to be supported. At the same time the blood pressure rose, and the pulse became slower and stronger. In no case did the dose lessen the anæsthesia to a degree sufficient to interfere with the operation in progress or about to be started. The patients appeared to wake rather earlier than the average, but exact data on this point are not available.

In two cases only was the intravenous route considered necessary. These were as follows.

C. 4/12/31. Just after her return to bed after dilatation and cauterisation of the cervix the patient's respirations suddenly became extremely shallow, and her pulse almost disappeared; her colour was blue-grey. Within one minute 1 c.cm. of coramine was injected intravenously and 2 c.cm. intramuscularly. There was an immediate improvement, and within 20 minutes the respirations and pulse were normal.

B. 22/4/32. Prior to operation, and to the administration of ether, this patient suddenly became cyanosed and respirations failed almost completely. The pulse was thin and rapid. 2 c.cm. of coramine were injected intravenously, and before the second ampoule was completely given a healthy colour returned. 1 c.cm. was then injected intramuscularly to sustain the action. The operation was conducted without further difficulty, but when it was completed approximately 45 minutes after, the respirations were again unsatisfactory, but rapidly improved on the patient's return to bed.

Although the results aimed at in this series were not so pronounced as those aimed at by Killian, in that no attempt was made to restore consciousness rapidly in any of the patients, they confirm his conclusion that coramine is an effective agent in counteracting and interrupting the cardio-respiratory depression of avertin anæsthesia, which very occasionally reaches a point where active measures are necessary to overcome it.

This work was done in Dr. James Young's Gynæcological Clinic, Royal Infirmary of Edinburgh, and in the Physiology Department, Edinburgh University.

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FATAL AT TWO YEARS OF AGE.

By H. B. Day, *M.C.*, M.D., F.R.C.P. Lond.,
ASSISTANT PHYSICIAN TO THE ROYAL CHEST HOSPITAL.

This case is reported because the valvular disease was apparently of the acquired type and its progress was observed.

A female child, aged 24 months, was admitted to the Royal Chest Hospital with the following history. The child had been a healthy infant, weighing 8½ lb. at birth. There were no other children in the family; the parents were healthy, though the father had had rheumatic fever. Normal healthy development continued until, at the age of 10 months, the child had an attack of "influenza" complicated by otitis media. After this illness her health was impaired and she ceased to put on weight. In June, 1931, when aged 20 months, she developed rapid breathing and cough. She was taken to Great Ormond-street Hospital in July, and subsequently admitted under Dr. R. S. Frew. I am indebted to that institution for the following notes.

On admission there was some dyspnœa, the face was pale, and examination showed impaired resonance and diminished air entry at the right base. There was some precordial bulging and a loud systolic murmur at the apex, which was within the nipple line. A radiograph showed some consolidation in the right lower lobe. The signs of unresolved pneumonia gradually cleared up and the child was discharged on August 28th. Subsequently she was brought as an out-patient, but during the next month her weight remained stationary at 20 lb.

In October the patient again became very short of breath, with swelling of the legs, and was brought to the Chest Hospital. Examination showed evident heart failure. The cheeks were flushed and the neck veins engorged; the legs were œdematous and the liver enlarged. Respiration was rapid, but on auscultation of the chest the air entry appeared free. There was some precordial bulging, and the heartbeat was forcible, rapid (120) but regular. The apex was in the nipple line and here a diastolic murmur with thrill was present, followed by a short systolic murmur. No systolic murmur was heard at the base; the pulmonary second sound was accentuated. The child was admitted forthwith (Oct. 24th). Examination of the blood showed a leucocytosis of 16,600; the Wassermann reaction was negative.

Five days after a temporary improvement, the temperature began to rise, and signs of pulmonary involvement appeared. A radiogram showed considerable consolidation in the central parts of the right lung with some pleural effusion. The child rapidly lost strength and died on Nov. 5th.

A post-mortem examination was made by Dr. Norah Schuster, pathologist to the hospital, who has contributed the following notes.

On opening the pericardium some patchy fibrosis of the visceral layer was seen. The heart weighed 90 g. The left ventricle was slightly hypertrophied; the right greatly hypertrophied. There were patches of fibrosis on the internal surfaces of both ventricles and the left auricle. The heart valves appeared healthy with the exception of the mitral, which was reduced to a slit aperture with absolutely rigid walls. The papillary muscles were fibrous and contracted; the edges of the valve were rolled over and extremely hard but without calcification. The foramen ovale and ductus arteriosus were closed.

Microscopical examination showed extensive fibrosis under the endocardium of all the chambers, most marked in the left auricle. Fibrosis in the muscle was greatest in the hypertrophied right ventricle, where there was extensive scarring and replacement of muscle by fibrous tissue. There was no cellular infiltration of the interstitial tissue and no Aschoff bodies could be found.

There were 20 oz. of clear fluid in the right pleura, 1 oz. in the left. The lung surfaces were smooth. On section there was some general purulent bronchitis, most evident in an area of consolidation near the root of the right lung. Microscopically this area showed purulent bronchitis and an alveolar exudate containing abundant endothelial cells. There was some thickening of the alveolar walls by cellular infiltration, but in the opinion of Dr. A. E. Naish (who kindly examined the section) it did not conform to the picture of a rheumatic pneumonia.

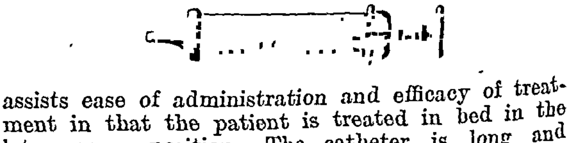
The liver was grossly enlarged and, with the spleen and kidneys, showed the usual appearances of passive congestion.

In this case the healthy condition of the infant for the first eight months of its life and the natural development of the heart in the closure of the foramen ovale seem to negative a congenital malformation. On the other hand, after an acute illness involving the throat, the child ceased to put on weight, and later showed progressive cardiac weakness. An apical systolic murmur was present in the summer and by the late autumn a definite thrill and presystolic murmur had developed. Death was due to progressive mitral stenosis complicated by recurrent inflammation in the lung. These features appear sufficient to justify the conclusion that the mitral disease was of the usual acquired type so common at a later period of life.

NEW INVENTIONS

UTERINE CATHETER.

Intra-uterine medication by glycerin is of service in sapræmia and salpingitis. Several treatments are required, and the instrument here illustrated—a modification of an Eustachian catheter—



assists ease of administration and efficacy of treatment in that the patient is treated in bed in the latero-prone position. The catheter is long and flexible, and after being moulded into a suitable curve is inserted by sight into the uterine cavity, the perineum being retracted by a Sims speculum. It fits an ordinary Record syringe.

Messrs. Allen and Hanburys, London, are the makers.

W. McKim H. McCullagh,
D.S.O., *M.C.*, F.R.C.S.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

AT a meeting of this section held on May 24th the hair was taken by Dr. E. P. POULTON, the President, nd a discussion on some problems concerning the **revention and Treatment of Acute Rheumatic Infection** vas opened by Dr. W. R. F. COLLIS.

The fundamental treatment of acute rheumatism lepended, he said, on a better understanding of its pidemiology. As a result of study in the special omes for rheumatics the importance had been ealised of the "silent" or "lag" interval of seven to 20 days between the acute throat and the rheumatic relapse; also the infective agent in the throat condition had been proved to be the hæmolytic streptococcus. The child had an acute tonsillitis, completely recovered and lost the streptococci from the throat, and then had a rheumatic manifestation a week or two later. Epidemics associated with other organisms were never followed by rheumatic relapses. If the hæmolytic streptococcus caused acute tonsillitis in non-rheumatic communities, the same syndrome could be observed: tonsillitis, lag period, acute rheumatic fever. There was no difference in ætiology between primary and secondary attacks. Rheumatic patients were very sensitive to hæmolytic streptococcal extract. The first tonsillitic attack sensitised the patient, so that the rheumatic attack was apparently an allergic phenomenon.

These considerations, leading to the conclusion that hæmolytic streptococcal throat infections were an integral part of rheumatic disease, threw open a new field of therapy. In rheumatic homes relapses could be prevented by hygienic measures; ward-swabbing in epidemics, and strict isolation of all cases and of all attendants whose throats harboured the organism; the administration of aspirin during the silent period, and the desensitisation of patients. Overcrowding seemed to be the chief cause of rheumatic fever in communities.

Dr. W. H. BRADLEY said that his own observations on a community of healthy boys showed the disease developing in a non-rheumatic community in exactly the same way as Dr. Collis's had shown relapses to appear in hospitals. The type of streptococcus causing the acute sore-throat was known in some cases to have been absent from the throat a few days before the attack. The condition was a simple hæmolytic streptococcal nasopharyngitis communicated by droplet spread. The school had been free from acute rheumatism for 40 years, though many waves of sore-throat due to other organisms had passed through it. Boys who had previously shown signs of rheumatism relapsed when they came into contact with these epidemics. Acute rheumatism in the general population seemed to be a family disease. The precursor fever would only produce rheumatism in predisposed subjects, and this personal factor might prove amenable to desensitisation. The attack on acute rheumatism should, however, be directed against the original sensitising fever. Continuous doses of aspirin from the onset of nasopharyngitis had value in preventing the subsequent rheumatism, but tonsillectomy was useless. One insulating material was of value above all others in preventing droplet infection—fresh air. Also useful were nasal breathing, clean handkerchiefs, a good diet with plenty of vitamins, warm feet, and a cool head. The pre-rheumatic must not catch cold.

Dr. CAREY COOMBS said that in the city of Bristol the rheumatism rate was very much higher than in the country round. In Bath, very similarly situated only 12 miles away, there was a striking contrast in incidence, possibly associated with the smoke-film over Bristol. A fall in body-weight on return home from hospital had been noticed in the rheumatic patients, even if the home food was adequate. The fall strongly suggested a relapse into a pre-rheumatic condition.

The PRESIDENT commented on the general agreement that acute rheumatism was associated with the hæmolytic streptococcus. Mitral stenosis and carditis could not be explained as allergic phenomena; there must be a stage of invasion as in scarlet fever. He still had a sneaking belief in the value of tonsillectomy; it was definitely useful in nephritis, on which acute rheumatism might supervene. He was rather suspicious of salicylates as being merely symptomatic treatment. He wondered if the advantage of Bath was not its warmth rather than its absence of smoke. The very poor did not get rheumatism because they warmed each other by crowding together.

Dr. F. J. POYNTON said that if there was such a thing as a specific disease, rheumatism in children was an example. It was one of the most specific diseases known. An organism might only develop specificity when it entered certain tissues. He feared that one of the great causes of rheumatism would prove to be sudden change of temperature. There must be a peculiar constitution in acute rheumatism, and he suggested that the individual was born with it, rather than developing a "pre-rheumatic state."

Dr. KINGSTON BARTON said that the deaths from rheumatic fever were much more numerous in the north; warmth had some influence.

Dr. LEONARD FINDLAY had the impression that a different strain of organism caused the arthritic and the choreic types of rheumatism. Tonsillectomy did have some effect, and salicylates were certainly specific in arthritis. He had grave doubts of the causative rôle of the hæmolytic streptococcus.

Dr. E. C. WARNER said that all the rheumatic relapses he had seen had been associated with hæmolytic streptococci in the throat. He wondered whether two different types of organism caused rheumatism and nephritis. The two conditions ran a comparable course, but were seldom associated. Vitamin A had proved not to affect the incidence of rheumatic relapses at all.

Dr. C. W. BRASHER asked for rheumatism figures from other smoky towns.

Dr. B. E. SCHLESINGER said that the environment was still a baffling factor; children often relapsed as soon as they returned from a convalescent home, but they might be well at home and relapse in the country. In some cold climates rheumatism was unknown. Aspirin had been used to try to stop the results of the precedent tonsillar infection, and seemed to have reduced the number of relapses. He doubted the value of tonsillectomy; relapses might be just as virulent after it. The responsible streptococcus need not necessarily hæmolyse blood agar; he had seen a *viridans* infection produce typical attacks. The causal factor might be some part of a streptococcus rather than a type of streptococcus.

Dr. D. H. GEFFEN said that the incidence of rheumatism was much lower on the northern heights were again unsatisfactory, but rapidly improved on the patient's return to bed.

Although the results aimed at in this series were not so pronounced as those aimed at by Killian, in that no attempt was made to restore consciousness rapidly in any of the patients, they confirm his conclusion that coramine is an effective agent in counteracting and interrupting the cardio-respiratory depression of avertin anæsthesia, which very occasionally reaches a point where active measures are necessary to overcome it.

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In October the patient again became very short of breath, with swelling of the legs, and was brought to the Chest Hospital. Examination showed evident heart failure. The cheeks were flushed and the neck veins engorged; the legs were œdematous and the liver enlarged. Respiration was rapid, but on auscultation of the chest the air entry appeared free. There was some precordial bulging, and the heart-beat was forcible, rapid (120) but regular. The apex was in the nipple line and here a diastolic murmur with thrill was present, followed by a short systolic murmur. No systolic murmur was heard at the base; the pulmonary second sound was accentuated. The child was admitted forthwith (Oct. 24th). Examination of the blood showed a leucocytosis of 16,600; the Wassermann reaction was negative.

Five days after a temporary improvement, the temperature began to rise, and signs of pulmonary involvement appeared. A radiogram showed considerable consolidation in the central parts of the right lung with some pleural effusion. The child rapidly lost strength and died on Nov. 5th.

A post-mortem examination was made by Dr. Norah Schuster, pathologist to the hospital, who has contributed the following notes.

On opening the pericardium some patchy fibrosis of the visceral layer was seen. The heart weighed 90 g. The left ventricle was slightly hypertrophied; the right greatly hypertrophied. There were patches of fibrosis on the internal surfaces of both ventricles and the left auricle. The heart valves appeared healthy with the exception of the mitral, which was reduced to a slit aperture with absolutely rigid walls. The papillary muscles were fibrous and contracted; the edges of the valve were rolled over and extremely hard but without calcification. The foramen ovale and ductus arteriosus were closed.

Microscopical examination showed extensive fibrosis under the endocardium of all the chambers, most marked in the left auricle. Fibrosis in the muscle was greatest in the hypertrophied right ventricle, where there was extensive scarring and replacement of muscle by fibrous tissue. There was no cellular infiltration of the interstitial tissue and no Aschoff bodies could be found.

There were 20 oz. of clear fluid in the right pleura, 1 oz. in the left. The lung surfaces were smooth. On section there was some general purulent bronchitis, most evident in an area of consolidation near the root of the right lung. Microscopically this area showed purulent bronchitis and an alveolar exudate containing abundant endothelial cells. There was some thickening of the alveolar walls by cellular infiltration, but in the opinion of Dr. A. E. Naish (who kindly examined the section) it did not conform to the picture of a rheumatic pneumonia.

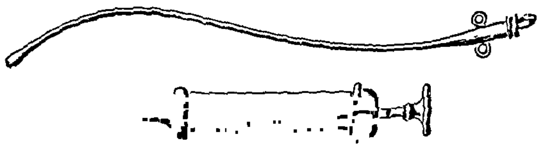
The liver was grossly enlarged and, with the spleen and kidneys, showed the usual appearances of passive congestion.

In this case the healthy condition of the infant for the first eight months of its life and the natural development of the heart in the closure of the foramen ovale seem to negative a congenital malformation. On the other hand, after an acute illness involving the throat, the child ceased to put on weight, and later showed progressive cardiac weakness. An apical systolic murmur was present in the summer and by the late autumn a definite thrill and pre-systolic murmur had developed. Death was due to progressive mitral stenosis complicated by recurrent inflammation in the lung. These features appear sufficient to justify the conclusion that the mitral disease was of the usual acquired type so common at a later period of life.

NEW INVENTIONS

UTERINE CATHETER.

INTRA-UTERINE medication by glycerin is of service in sapræmia and salpingitis. Several treatments are required, and the instrument here illustrated—a modification of an Eustachian catheter—



assists ease of administration and efficacy of treatment in that the patient is treated in bed in the latero-prone position. The catheter is long and flexible, and after being moulded into a suitable curve is inserted by sight into the uterine cavity, the perineum being retracted by a Sims speculum. It fits an ordinary Record syringe.

Messrs. Allen and Hanburys, London, are the makers.

W. MCKIM H. MCCULLAGH,
D.S.O., *M.C.*, F.R.C.S.

of the rectum for cancer when the latter was adherent or involved the vesiculæ seminales in front. Injuries to the ureter were more serious, and they should not occur during a perineal excision; there was, however, a definite risk of injuring the left ureter when carrying out abdomino-perineal excision. If both kidneys were healthy and not infected, he regarded ligature of the ureter as a sound procedure.

In most cases of vesico-colic fistula the best treatment was immediate colostomy.

THE CATHETER HABIT.

Mr. **Lionel Norbury** dealt only with post-operative urinary complications, and vesico-colic fistula. Injury to pelvic nerves, he said, might be a very serious complication in operations for removal of the rectum, but careful handling of the tissues minimised the risk. The difficulty which many patients had in micturition after rectal operations was probably of reflex character; it was quite common after the removal of piles. There was also a difficulty due to catheterisation. The use of a catheter predisposed to infection of the urinary tract, and was the main path by which micro-organisms reached the urethra and the higher portions of the urinary tract. This risk was greater in women than in men. The "catheter habit"—i.e., failure to empty the bladder without the aid of a catheter—was particularly common in women, some of whom had to be re-educated in the matter. A method of preventive treatment, which had greatly reduced the incidence of urinary infection in men, was the use of an indwelling catheter the end of which was sealed by an antiseptic solution. In women infection was largely the result of catheterisation. At the Royal Free Hospital he had had only one case of vesico-colic fistula; as the patient refused operation he did not know whether it was due to diverticulitis or carcinoma.

Dr. **Cuthbert Dukes** said that after a catheter was tied in, three types of infection of the urine might occur. Infection might have taken place either from trauma at the operation, or during the catheterisation, or it might be hæmatogenous in origin. Urinary infections were more common in advanced than in early cases of cancer.

Mr. **E. T. C. Milligan** spoke of the treatment of post-operative urinary fistula. Some urinary fistulæ healed without their cause having been discovered. If the prostate was enlarged it should be removed as soon as the patient was fit for that operation or the fistula was unlikely to heal.

Mr. **G. E. Neligan** called attention to the long time during which some people with vesico-intestinal fistula could live in comparative comfort; in one case the period of comfort was 15 years.

Mr. **John Everidge** spoke of the difficulty of dealing with prostatic retention after some form of colostomy. He commented on the possible value of perurethral prostatic destruction or a method of channelling the prostate, to tide the patient over his period of acute retention, and so enable him to wait until the rectal condition could be dealt with. Cases of prostatic retention associated with carcinoma of the intestine were not very common, but he had recently had such a case, in which a surgeon had done cæcostomy because of acute intestinal obstruction due to growth lower down. Soon after cystoscopy there was acute retention, and the man was found to have an enlarged prostate, and a definite prostatic bar, the existence of which a number of urologists denied. It seemed to be a good case for cauterisation of the prostate, and this succeeded, but the patient died a little later from uræmia.

TUBERCULOSIS ASSOCIATION.

At a meeting of this association, held on May 20th, at the London School of Hygiene, Dr. O. M. **Mistal** (Montana, Switzerland) read a paper on different methods of

Severing Adhesions in Artificial Pneumothorax.

Statistics collected in America and elsewhere showed, he said, the importance of obtaining a complete pneumothorax, but that unfortunately this was not always possible, adhesions interfering with some 75 per cent. of the cases. Various methods of dealing with these adhesions had been tried, among the more popular of which were those of Sauerbruch and Archibald, who severed the adhesions after a double ligature; Paternoster, of Buenos Aires, who resected a part of the eighth rib and freed the adhesions by hand; and that of Jacobaeus under the control of thoracoscopy. The clinical indication for the section of adhesions was when a patient with artificial pneumothorax continued after three to six months to expectorate bacilli and elastic fibres, and to show toxic symptoms. Sometimes the division of only a few small adhesions was sufficient to bring about the disappearance of bacilli. In children, however, the severing of adhesions was often unnecessary, since they stretched by themselves, and the scars were fresh and easy to compress.

The presence of exudates was not necessarily a contra-indication to the operation, unless there was a high degree of fever, or a mixed infection with much albumin. In cases of empyema the operation was possible but dangerous, since it often resulted in fistulas of the chest wall. Tuberculosis of the larynx was not a contra-indication, but nephritis and intestinal tuberculosis were absolute contra-indications. A preliminary radiological examination was essential, but even with this control more adhesions were usually found with the thoracoscope than had previously been suspected, and these might be situated at a different angle than that apparently shown by the X ray. Careful screening of the patient in different positions would obviate many of these errors, especially if the stereoscope was used. Thoracoscopy was the final factor in deciding as to the possibility or advisability of separating the adhesions. Investigation was often especially difficult in pneumothorax cases with a residue of pleurisy, since it was not easy to differentiate between connective and pulmonary tissue. Sounding with a luminous Maurer hook might, however, be of great service.

Maurer grouped adhesions into four classes, Group 1 being composed of adhesions of uniform shape, threads, or cords, which were easy to section. Group 2 consisted of adhesions with an enlarged thoracic insertion, which could also be divided without danger. Group 3, with enlarged and conical pulmonary insertion, were dangerous to cauterise, owing to the risk of opening up cavities. The fourth group was composed of adhesions of hour-glass shape, which had a thoracic insertion of connective tissue and a pulmonary insertion of parenchyma. These adhesions should, of course, be separated in the connective tissue portion.

There were, said Dr. Mistal, various types of thoracoscopes with cautery and lamp carriers. That of Jacobaeus gave an optical deflection of 90°, the modification of this instrument by Unverricht being more luminous and having a larger optical field. With Chandler's thoracoscope, which gave an optical deflection of 30°, orientation was easier. Kremer's thoracoscope gave direct observation of adhesions, without deviation of the optical ray and without transposition, but it could not be used in a small than in other parts of London which were warmer, but which lay under the smoke pall.

Dr. N. GRAY HILL commented on the very small extent to which rheumatism spread in wards or to the nursing staff. There did seem to be some innate predisposition.

The openers briefly replied, Dr. COLLIS remarking that serum was useless and definitely contra-indicated.

SUBSECTION OF PROCTOLOGY AND SECTION OF UROLOGY.

A JOINT meeting of these sections on May 11th, with Mr. W. S. PERRIN, President of the subsection, in the chair, was devoted to the

Urinary Complications of Diseases of the Large Intestine.

Mr. HUGH LETT said that the kidney might show pyelitis or pyelonephritis in many disorders of the large intestine—such as chronic intestinal stasis, colitis, dysentery, diarrhœa, and inflamed hæmorrhoids—while in the pelvis an extension of carcinoma of the rectum might compress one or both ureters. Cystitis, with or without pyelitis, might also be met with in inflammatory conditions of the large intestine. And other conditions, such as cancer or tuberculosis might establish communication between the cæcum, colon, rectum, and bladder. Fissure-in-ano sometimes caused definite pain in the bladder and urethra, and infection of hæmorrhoids had been followed by uncomfortable urinary sensations.

At the London Hospital 172 cases of diverticulitis were admitted in the period 1922–31, and 10 per cent. of these had secondary urinary symptoms. This showed that the incidence of vesical complications was comparatively small; they included disturbance of micturition, *B. coli* cystitis, perivesical abscess, and vesical fistula. Of the six cases of pericystitis, all had been admitted with acute diverticulitis. In none of the six could an abscess be detected. Three of them recovered after medical treatment. The urine was normal in five cases and in the sixth contained red cells and a few leucocytes. Cystoscopic examination was negative. The symptoms in these cases were due to involvement of the bladder wall, the direct result of the extension of the inflammation from the colon. Perivesical abscess if untreated would probably burst into the bladder. An abscess large enough to be detectable above the pubes should be treated by a preliminary incision, followed by drainage.

Vesico-colic fistula was very rare. In the ten years 1922–31, 96,192 patients were admitted into the surgical wards of the London Hospital, and the cases of vesico-colic fistula amounted only to 1 in 10,000 ordinary surgical cases. When it occurred it was usually a symptom of diverticulitis. In malignant disease of the colon fistula was a late development, and the patient was usually so ill that he was admitted to an infirmary. The cystoscopic findings varied. In recent cases of fistula there was an acute general cystitis, with a circumscribed, red, œdematous area. If the fistula had been present some time and the opening was only small, the cystitis gradually became less acute, the œdema disappeared, and was replaced by a small ulcerated area, the rest of the bladder appearing to be normal. Once a vesico-colic fistula was formed, nothing short of colostomy could cure it. Two or three weeks after colostomy, the bladder symptoms rapidly disappeared, and, except for a haze due to bacilluria, the urine became clear. In some cases transverse colostomy was the operation of choice, as in the presence of multiple diverticuli in the descending colon. Colostomy, however, did not always result in a permanent closure of a fistula. When the colostomy was done it was essential to close the distal end of the bowel properly, otherwise leakage might set up reinfection.

Mr. CYRIL NITCH said that urinary complications associated with disease of the large intestine were due to direct involvement of some part of the urinary tract either by spread of inflammation, by adhesion, by invasion of growth, or by a fistula. The kidney was but rarely implicated, owing to its protective barrier of fat and fascia. Bladder symptoms occurred more frequently with diverticulitis of the pelvic colon than with rectal or colic growths. The lymphatics of the cæcum and ascending colon communicate with the lymphatics of the right kidney. A combination of bladder and bowel symptoms was almost pathognomonic of an inflammatory cause. In a series of cases of diverticulitis 50 per cent. had urinary symptoms, whereas in a larger series of carcinoma of rectum and colon only 2·4 per cent. had fistula. The treatment of vesico-colic fistula should be cautious, and in most cases conservative for a considerable time. A preliminary cystoscopy should always be carried out to ascertain the position and size of the opening and its possible cause. If this were found to be intraperitoneal the abdomen was opened and examined carefully with as little disturbance as possible of the pelvic contents. Colostomy should then be carried out mostly in the transverse colon, though in some cases the inguinal operation was preferable. If the fistula was due to a growth considered irremovable, the excision should be carried out as soon as the artificial anus was properly established. If it was due to diverticulitis, however, a year or 18 months should be allowed to elapse before resection was attempted. If normal micturition was not restored after removing the catheter, there were four alternatives: (1) regular catheterisation by the patient or an attendant; (2) removal of obstructing prostatic tissue by perurethral endothermy; (3) permanent drainage by a self-retaining catheter inserted through the bulbous portion of the urethra; (4) (as a last resort) suprapubic drainage.

RETENTION OF URINE.

Mr. J. P. LOCKHART-MUMMERY said the subject covered a wide range of conditions, from retention of urine following the ligation of a pile to the division of a ureter during excision of cancer of the rectum. Retention of urine was a common sequel to this latter operation, which must inevitably cause some injury to the sympathetic nerve-supply of the bladder. He was accustomed to use a retained catheter for some days after the operation, employing Dr. Cuthbert Dukes's apparatus, which enabled the whole catheter area to be bathed in a weak antiseptic. But there was a liability to partial retention after the catheter had been removed, and it was the residual urine which caused infection. The patient should empty the bladder as completely as possible, and it should be regularly washed out. Mr. Lockhart-Mummery had discontinued the use of antiseptics by the mouth. Incontinence following excision of the rectum was very rare; he had had only two cases of nocturnal incontinence after it, both in males, one clearing up in six weeks, the other in two months. Injuries to the urethra after operations on the rectum were also uncommon in his experience; a catheter tied into the bladder and a careful repair of any such injuries with stitches resulted in perfect union. But injuries to the bladder were very likely to occur, either intentionally or accidentally, during excision

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Sir **THOMAS HORDER** said that sterilisation did not differ from birth control in principle but only in efficiency. Cutting of the human body might be regarded as mutilation, although where an operation was undertaken on behalf of the health of the patient the offence was presumably theoretical, provided reasonable skill and care were shown. Sterilisation was frequently undertaken for women in whom childbearing involved a danger to life. It was conceivable that the husband, in such circumstances, might offer to be sterilised, in order to spare the wife the dangers of the operation. What would be the legal position of the doctor who undertook to sterilise him? Or what would be the legal position of the doctor who sterilised himself? It was not often that a doctor would undertake sterilising operations for reasons other than health, while the legal cover remained so slender. The hospitals, moreover, refused to sterilise patients on eugenic grounds and it was undesirable that there should be a discrepancy between hospital practice and private practice.

PARLIAMENT AND THE LAW.

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Mr. **CECIL BINNEY** said that the law as it affected sterilisation was not simple. Civil proceedings could only be taken against the doctor if he was guilty of breach of contract, for example if he performed the operation against the patient's will, or if he was guilty of negligence. If sterilisation was performed for the benefit of the patient's health it was legal, but there was little doubt that sterilisation of mentally defective persons or persons of unsound mind on eugenic grounds was illegal. The 1861 Act which codified criminal law covered crimes of violence. The consent of the patient would probably be regarded as a defence, under this Act, of a doctor who had performed sterilisation on a person of sound mind. But if the view was taken by the judge and jury that the operation constituted "grievous bodily harm," the consent of the patient would *not* constitute a defence. He was not aware, however, of any express prohibition to self-mutilation. If it was decided that sterilisation was contrary to public policy, then the patient and doctor might be found guilty of conspiracy in consenting to and performing the operation. He thought it would be illegal for a man to be sterilised in order to save his wife from the operation; the law would take the view that he might marry again later. Doctors were unwilling to perform the operation while the state of the law was ambiguous, and it was highly desirable that the law should be made more certain.

STERILISATION IN OTHER COUNTRIES.

Mrs. **C. B. S. HODSON** said that sterilisation of mentally defective persons had been carried out in many American States for about 30 years; she had visited the States in 1928, and had found that, even in the most conservative of them, sterilisation was being carried out on quite a large scale, and was outrunning the legal position. In California defective persons coöperated voluntarily, and were proud of having had the operation performed, regarding it pneumothorax. Adhesions could be cauterised by one of two methods—galvanic or diathermic, the former being the older and the more simple. Absolute asepsis was essential, just as much as in the case of a major operation. The section of adhesions being often very painful, it was necessary to anæsthetise them, this being done by means of long needles. Galvanic cauteries were bent or straight, the former being preferred by Unverricht. When dividing adhesions by the galvano-cautery it was important to cauterise with a red glow which, though acting slowly and emitting smoke, had the advantage of properly coagulating the tissues and preventing hæmorrhage. A white glow irradiated too much heat; it cut rapidly, but exposed the patient to the risk of bleeding. The chief advantages of diathermy were the absence of radiant heat and smoke; the easy and practically painless division of adhesions; and the avoidance of hæmorrhage. The voltage was regulated according to the type of tissue to be sectioned, a weak current being generally used, and a stronger current for old fibrous adhesions. The two methods of cauterisation had each their respective advantages, and many authorities combined them, using galvano-cauterisation after a preliminary diathermic coagulation. Maurer had designed a combined instrument for this purpose.

Complications due to the section of adhesions, though increasingly scarce owing to improvement in technique, included exudate, 30 per cent. of which appeared to be due to hæmorrhage, and could be avoided by working far from the vessels and by coagulating the more vascular strings; emphysema, which was chiefly met with in patients who were coughing a good deal; empyema, which might occur as late as six months after the operation; and symphysis, which could be avoided by timely refills. Many of the failures after cutting adhesions could be avoided by a proper selection of cases, and by undertaking the operation within three months of initiating a pneumothorax.

Atelectasis, Detelectasis, and Apneumatosis.

Dr. ERNEST FLETCHER read a paper with this title. The term "collapse of the lung" was, he said, being used to include so many different conditions with widely differing ætiology, that two new terms had been introduced—detelectasis and apneumatosis. The term detelectasis implied that a lung which had once been inflated was now collapsed or collapsing—differing thus from an atelectatic lung, a term which should only be used with reference to a congenital or fœtal condition of incomplete expansion of the lungs. Detelectatic collapse was nearly always lobar; there was actual falling in of the lobe so that the visceral and parietal layers of the pleura were no longer in contact. The term apneumatosis was used by the speaker to describe a special condition generally due to bronchial obstruction in which the alveoli were comparatively airless, but the elastic tissue of the lung being intact the visceral and parietal layers of the pleura were in their usual relationship.

Atelectatic areas might be either lobar or lobular in distribution. In the lobar type atelectasis led to a considerable reduction in the volume of blood going through the lobe, so that there was little circulation through unaerated blood channels. The final stage of lobar atelectasis was often confused because of a terminal infection in the lung or elsewhere. The symptomatology was either that of the diminishing area available for pulmonary ventilation or that of the terminal infection. The age of the patient varied, the oldest recorded case being 58; and the actual cause of death might be a hæmoptysis. It was evident that if the parenchyma of a lobe was atelectatic, the bronchi supplying the lobe must dilate when they became infected, and this was probably the reason why these conditions had always been labelled bronchiectasis. In the lobular type of atelectasis small areas in various parts of the lung remained permanently uninflated, in the case either of weakly children or of children subjected to unusual stresses. The atelectatic areas in these cases being scattered and in close proximity to fully patent alveoli would receive an almost normal blood-supply, and in consequence a proportion of blood would be returned unaerated from the lungs; the carbon dioxide tension would rise, and the hæmoglobin would be incompletely saturated. Such children therefore suffered from attacks of dyspnœa and cyanosis; and were prone to infection in their early days, so that broncho-pneumonia was a common incident with them. The final stage of lobular atelectasis was probably the condition known as congenital cystic lung. As a rule the case would come to notice either because the cysts pressed on the rest of the lung or because they became infected or led to bronchiectasis.

Detelectasis might be of sudden or gradual onset, the former type including the condition known as "massive collapse," the mechanism of which was still in doubt. Detelectasis of gradual onset usually involved a complete lobe—in the majority of cases the lower lobe. In a recent series of 100 cases of bronchiectasis of the general non-specific type, 20 had atelectatic lobes, 15 of these patients being under 17 years of age. These cases were difficult to diagnose clinically, since they gave no signs except those of the compensatory emphysema which occurred in the other lobes. The X ray was the usual method of diagnosis, the detelectatic lobe being represented by the basal triangular shadow with its hypotenuse running obliquely downwards and outwards from the mediastinum to the radiological periphery of the lung field. Atelectasis of gradual onset was never seen except in cases of gross lung infection, which might or might not be specific. Elastic fibres were never found in the sputum, as they might be in tuberculosis, but as the infection spread through the lung the fibres were involved and became destroyed in situ. Then as the destruction of elastic tissue proceeded the negative pressure fell and gradually the lobe collapsed. In all cases where general detelectasis occurred there was a compensatory emphysema in the other lobes of the same lung, but never, apparently, in the other lung. This was evidently not a central but a peripheral mechanism. X ray photographs showed that gradual detelectasis involved no displacement of the mediastinum, in contrast to the condition found in acute detelectasis where such displacement was one of the classical diagnostic signs.

Apneumatosis.—In this condition there might be either merely impairment of lobe and diminished air entry over the affected lobe, or the classical signs of consolidation might be present, irrespective of the ætiological factor concerned; but depending on the degree of obstruction and the rate at which it had occurred. On the X ray film there was a loss of translucency confined to the lobe concerned, the loss of translucency being seen as far out as the radiological periphery of the lung. Extensive apneumatosis was occasionally seen in connexion with fibroid tuberculosis where the larger bronchi were concerned. Kyphosis and kypho-scoliosis frequently led to apneumatosis because of the kinking of the bronchi.

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Mr. Cecil Binney said that the law as it affected sterilisation was not simple. Civil proceedings could only be taken against the doctor if he was guilty of breach of contract, for example if he performed the operation against the patient's will, or if he was guilty of negligence. If sterilisation was performed for the benefit of the patient's health it was legal, but there was little doubt that sterilisation of mentally defective persons or persons of unsound mind on eugenic grounds was illegal. The 1861 Act which codified criminal law covered crimes of violence. The consent of the patient would probably be regarded as a defence, under this Act, of a doctor who had performed sterilisation on a person of sound mind. But if the view was taken by the judge and jury that the operation constituted "grievous bodily harm," the consent of the patient would *not* constitute a defence. He was not aware, however, of any express prohibition to self-mutilation. If it was decided that sterilisation was contrary to public policy, then the patient and doctor might be found guilty of conspiracy in consenting to and performing the operation. He thought it would be illegal for a man to be sterilised in order to save his wife from the operation; the law would take the view that he might marry again later. Doctors were unwilling to perform the operation while the state of the law was ambiguous, and it was highly desirable that the law should be made more certain.

STERILISATION IN OTHER COUNTRIES.

Mrs. C. B. S. Hodson said that sterilisation of mentally defective persons had been carried out in many American States for about 30 years; she had visited the States in 1928, and had found that, even in the most conservative of them, sterilisation was being carried out on quite a large scale, and was outrunning the legal position. In California defective persons coöperated voluntarily, and were proud of having had the operation performed, regarding it as something which placed them on the level of the most responsible thinkers in the community. The relatives were also ready to coöperate, and brought children to the institutions voluntarily in order that they might be sterilised. There appeared to be a diminished tendency to promiscuity among those operated on, probably because of careful education in the institutions, and supervision afterwards under a high type of social worker.

Miss **H. Pocock** said that Alberta, Canada, was the only province in the British Empire which had an Act authorising sterilisation of mentally defective persons. This Act became law in 1928, and up to December, 1931, 106 cases had been presented for sterilisation and the operation had been approved by the Board in 101. Sterilisation had been performed on 80 of these up to that time; in the follow-up reports of 32 of them, it was interesting to note that 17 patients had "improved physically and mentally, and with satisfactory adjustment," 13 were physically well with no mental change, and 2 were fair physically and mentally. Recommendations for sterilisation were first made by the head of the mental defective training school; a report was then made by a social worker on the family history and home conditions. The patient was next seen by an independent doctor, and if he agreed with the previous reports, the patient, or those responsible for him, asked for the operation in writing and signed the document before witnesses. This request with the three reports was sent to the Board and then to the Minister of Health. If the case was approved, the operation was performed free of charge. In Michigan, U.S.A., a system of compulsory sterilisation was in force, but, in addition, every attempt was made to secure the coöperation of the patient and his parents.

SOCIAL AND MORAL ASPECTS.

At the afternoon session Prof. **R. Ruggles Gates** took the chair, and the discussion was opened by Prof. **A. M. Carr Saunders**. There was no objection, he said, to sterilisation performed in the interests of health, and therefore it was not the operation itself but its purposes to which objections were raised. There was, however, a moral obligation not to bring defective children into the world. Sterilisation was not proposed as an alternative to segregation but as an adjunct to it. Prohibition of marriage was humiliating, and, besides being ineffective, robbed the defective person of the opportunity of enjoying a stabilising environment. While there was no reason to suppose that sterilisation would increase promiscuity or the spread of venereal disease, it was extremely probable that the prohibition of marriage would augment these evils. It was unlikely that sterilisation would rob the world of persons of talent or genius, for these were rarely born to mentally defective parents.

Dr. **C. J. Bond** said that a movement was going on under the Leicester local health insurance committee to spread information on eugenic marriage. The local body responsible for the welfare of the blind had been reluctant to allow those under their care to marry where there was a danger of transmitting blindness. It had been possible to arrange for the sterilisation of some of these patients, with the result that they had been able to marry. Hospitals were unwilling to give facilities for voluntary sterilisation to their patients, and this operated unfairly as between the rich and the poor. An informed public opinion and a change in the law were needed.

The Rev. **J. C. Pringle** said that the principle of voluntary sterilisation had extended at least through the last three civilisations. For 400 years the marriage service had embraced three distinct reasons for union: to provide an outlet for the sexual impulse; for the procreation of children and their proper nurture; and for "mutual society, help and comfort." In this, it was clear that the sexual impulse was differentiated from the procreation and care of children. The same principles appeared to have obtained in previous civilisations. It might therefore be regarded as socially and morally right to make the best possible adjustment as regards sex, and socially and morally wrong to bring children into the world unless all conditions were favourable to their nurture on the best lines.

Dr. **C. P. Blacker** said that the practical proposals of the Eugenics Society embraced sterilisation for mentally defective persons, mental convalescents, and those suffering from hereditary diseases, disabilities, or defects other than insanity or mental defect. The Bill introduced by Major Church had been limited to mentally defective persons only. It had been estimated that only 5 per cent. of mentally defective persons had mentally defective parents, and the reduction in the incidence of mental deficiency attainable by legalising the sterilisation of this group would therefore be small. To decrease the incidence to any marked extent it would be necessary to include the so-called social problem group among those covered by any change in the law. The legal position with regard to the sterilisation of persons not of unsound mind was not well defined, and it might be possible to popularise the operation for the social problem group, disregarding the state of the law.

In the discussion which followed Dr. **R. A. Clegg** put in a plea for large families. Many distinguished persons, he said, were the seventh or eighth sons of clergymen. He thought it inadvisable to discourage large families.

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Dr. **J. Greenwood Wilson** and Councillor Mrs. **E. A. Weston** urged the advantage of getting into touch with town councillors up and down the country, in an attempt to establish an informed public opinion on sterilisation of mentally defective persons.—Other speakers included Mrs. **Neville Rolfe**, Alderman **J. W. Black**, Mrs. **Laski**, Lady **Jones**, and Dr. **K. B. Arkman**.

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THE annual conference of the Royal Institute of Public Health was held at Belfast, May 10th to 15th, Lord LONDONDERRY presiding. The meetings were well attended throughout by members of the public as well as by professional workers. A proposal made during the conference was that a Ministry of Health should be established in Northern Ireland.

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Sir THOMAS OLIVER spoke of the unsatisfactory *hygienic conditions in the British mercantile marine.* In 1926 30·5 per cent. of the British ships inspected in the port of Manchester were found to be insanitary, against 18·9 per cent. of the Norwegian ships and 17·2 per cent. of the U.S.A. ships. Dr. A. M. CRITCHLEY (West Suffolk) confirmed this view. In most British ships the passengers were the first consideration, then the cargo, and the crew were put into whatever space was left over, with the result that their cabins are small, uncomfortable, and badly ventilated. On the Russian boats there were only two seamen to a cabin, and a recreation room was provided. From a visit to Russia he had found that in some respects industrial hygiene there was in an advanced stage.

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Occupational dermatitis.—Dr. R. M. B. MacKenna

(Liverpool) referred to the difficulty of stating definitely in courts of law whether the skin trouble from which a workman was suffering was or was not an occupational dermatitis. He agreed with the view that in all cases of dermatitis there is an inherent defect of cellular structure or metabolism of the skin whereby certain irritants readily cause eczematous reactions. A certain time must elapse during which the patient became sensitive to the deleterious agent. The incidence of dermatitis would probably be reduced to a small extent if seborrhœic and hyperidrotic subjects, those with a family history of psoriasis and sufferers with xerodermia and prurigo, were excluded from entering trades such as bakery, confectionery, French polishing, and cement work.

TUBERCULOSIS.

Dr. Jane Walker (Nayland, Suffolk), speaking on the *economic aspects of tuberculosis* stated that both incidence and mortality was increasing in the vast army of 2 million women who were employed as clerks, cashiers, and other occupations involving arduous exertion. Dr. D. A. Powell (Welsh National Memorial Association) said that the disease hardly affected the average married woman. Sir Dawson Bates, M.P. (Minister of Home Affairs, Northern Ireland), stated that in 40 years in the highly industrialised city of Belfast, the death-rate from pulmonary tuberculosis had been reduced to nearly one-fifth; in 1890 it was 4·7 per 1000, and by 1930 it had been reduced to 1 per 1000.

Problems in treatment.—Dr. J. Shaw (Belfast) referred to the findings of Dr. Percy Stocks and Miss M. N. Karn relating to the first 2794 consecutive cases of undoubted pulmonary tuberculosis coming under the survey of the Belfast Tuberculosis Dispensary in the years immediately following 1914. They found that the progress of patients in the early stage treated in sanatoriums was rather worse than that of those treated otherwise; no difference was apparent in the progress of patients in advanced stages in the two groups. Dr. Shaw, however, did not claim that patients would do better at home than in a sanatorium, but that removal to sanatorium should not be a routine measure. He referred to another curious fact. Dr. A. Trimble, when investigating over a period of seven years the fate of children aged 5 years and under living in tuberculous households, found that they did not suffer a death-rate from all causes significantly different from the normal; possibly supervision by the tuberculosis nurse protected them from infection. Dr. R. C. Wingfield (Frimley) put in a plea for turning the tuberculosis service into a purely clinical service, leaving the prevention of tuberculosis to the general public health service.

PATHOLOGY, BACTERIOLOGY, AND BIOCHEMISTRY.

Dr. J. W. Bigger (Dublin) said that in his opinion abortus fever would remain a rare disease in the British Islands. He wished to distinguish between invasions of the human body by the *Brucella abortus* and infections. The organism might pass through the alimentary duct and produce no effect; it might invade the tissues and grow in lymphoid tissues, and although defeated produce agglutinins so that a high titre might be present although the individual has never had the disease; in very rare instances it overcame the resistance and produced infection. The rate in Northern Ireland was 4 cases per million; in the Irish Free State, 0·7; in England and Wales, 0·3; in Denmark and the State of Iowa the figure reached 85 cases per million. In Iowa the majority of isolations of the causative organism from the blood or urine had been of the porcine strain. The only explanation Dr. Bigger could offer of the high prevalence of abortus fever in Denmark, where the bovine type only existed, was that the cows in Denmark must be affected by a strain more virulent to man than those in Great Britain or Ireland. The ideal laboratory method of diagnosis is the cultivation of *Br. abortus* from the blood, urine, or elsewhere, but the comparatively small numbers of successful isolations make it probable that in many cases the organism never gives rise to a septicæmia or bacteræmia and is not present in the urine. Dr. J. S. Baxter (Belfast) pointed out that abortus fever was rare in childhood, the age at which the largest amount of milk was consumed. Dr. Baxter suggested that there were two other possible methods of spread, through insect bites and through carriers.

Dr. G. F. W. Tinsdale (Belfast) gave details of attempts to induce abortus fever experimentally in volunteers. In three cases the ingestion of milk contaminated with 24-hour cultures of porcine strains of *Br. abortus* had no effect, nor did infection result when the dose of milk was repeated after preliminary neutralisation of the gastric juice by a large dose of alkali. Six volunteers were given intravenous doses of *Br. abortus* varying from 20–500 million; the only effect was a temporary rise of temperature. Finally, pyrexia typical of undulant fever with loss of appetite and sweats was produced by the intradermal injection of 20 million of live organisms, suggesting that the commonest method of infection was the contact of the skin with infected material. Dr. W. P. O'Callaghan (Dublin) by testing the blood of 416 pyrexial cases sent for examination in suspected cases of enteric fever had found two which gave agglutination in a titre of 1/2500. On inquiry it was evident that both the patients were cases of abortus fever. From one he isolated the *Br. abortus*. Mr. H. G. Lamont (Ministry of Agriculture, Northern Ireland), when growing the *Br. abortus* from the fœtal calf in cases of infectious abortion in cattle, had found that the pH of the medium must be between 7·5 and 7·8. The acidity of stale milk might account for the infrequency with which the organism was recovered from milk.

VISITS.

Among the visits paid one was to the York Street Flax Spinning Company. The earliest stages of the combing of the flax was carried out by hand by women working in front of hoods provided with exhaust ventilation; notices were put up warning the workers of the danger of contracting tuberculosis if they did not carry out the precautions advised. In the rooms where the flax was combed by machinery exhaust ventilation was also provided. The women and the few men working in the rooms where the narrow flax sliver was passed through hot water in the final stages of its conversion into thread were all barefooted, a precaution against slipping on any oil spilt on the stone floor. High temperature (109° F.) and high humidity were both present in one room where linen was woven and paste used to promote adherence of the threads.

A visit was also paid to the municipal abattoir which was erected shortly before the war. There are now no private slaughter-houses in Belfast, all the owners having been compensated. Three sanitary inspectors who possess the meat certificate act as detention officers, and see practically every carcass opened; the final decision on any doubtful carcass is made by a veterinary inspector.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in Bacteriology and the Study of the Infections.

Second edition. By J. HENRY DIBLE, M.B. Glasg., F.R.C.P. Lond., Professor of Pathology in the University of Liverpool. London: J. and A. Churchill. 1932. Pp. 476. 15s.

THIS has proved, as we anticipated it would, a popular contribution to the Recent Advances series. A second edition has been called for within three years of the first, and a demand was made in 1930 for a Spanish translation. The new edition has been revised and considerably enlarged, over a hundred pages being added. Fresh sections are incorporated on the typhoid-salmonella group and antigenic analysis, on brucella infections, on flocculation tests for syphilis, and on certain diseases due to filtrable viruses such as psittacosis, dengue fever, and sandfly fever, while yellow fever has been transferred from the spirochætal to the filtrable virus infections. Most of these new sections are satisfactory. The antigenic analysis of the salmonella group has been very clearly set forth, and in discussing the modern Widal reaction, with its demand for a much larger series of antigens, the author has maintained a well-balanced attitude, pointing out the advantages both of the old formolised and of the new alcoholised suspensions. In the table on p. 87 a mistake has been made in the structure of *B. paratyphosus* A; the H antigenic factor should be T not I, and according to Bruce White's latest work the somatic factor should be vi not xi. The general account of the filter-passing viruses is perhaps rather below the high level of the rest of the book. Since the publication of the first edition a considerable amount of work has been done on these bodies, tending to bring them more and more into line with the ordinary bacteria, and very little of this work has here been included. In regard to ultra-filtration, no reference is made to any paper later than 1927, no account of Elford's work in this country or of Bechhold's in Germany having been included. The relation of the elementary bodies to the infective agent in variola and fowl-pox, for example, as determined both by ultra-violet microscopy, by staining, and by centrifugal methods is not considered. In the next edition we may hope also for an account of recent work on dog distemper. These omissions are noticeable only because the book is such an excellent one. It is a great feat, in these days when bacteriology is expanding so rapidly, to have produced such an accurate and fair-minded account of its most recent developments.

An Index of Treatment.

Tenth edition. By Various Writers. Edited by ROBERT HUTCHISON, M.D., F.R.C.P., Physician to the London Hospital, and Physician to the Hospital for Sick Children, Great Ormond-street. Bristol: John Wright and Sons, Ltd. 1931. Pp. 1027. 42s.

THE tenth edition of this work is edited by Dr. Robert Hutchison alone, whereas originally the late Mr. H. Stansfield Collier and afterwards Mr. James Sherren were associated with him. Many branches of medical treatment are dealt with concisely and lucidly by recognised masters, whose names alone afford a guarantee of efficient handling. On exophthalmic goitre Prof. F. R. Fraser writes a model of what an article on medical treatment should be. We see the mark of the expert in the articles on eye diseases by Sir William Lister, on genito-urinary diseases by Mr. Hugh Lett, and on cardiovascular diseases by Dr. John Parkinson. Dr. J. D. Rolleston writes comprehensively on infectious diseases, Dr. P. H. Manson-Bahr on tropical diseases, and Mr. R. Milne on orthopædics. Mr. James Sherren's articles have been mainly revised by Mr. A. J. Walton, though Mr. Hugh Cairns has become responsible for that on the surgical affections of nerves. Dr. Sequeira's articles have been revised by Dr. J. M. H. MacLeod, and those of Dr. H. Russell Andrews by Mr. Victor Lack.

Among the subjects now included for the first time are anæsthesia for children, diabetes in childhood, erythræmia, glandular fever, hyperparathyroidism, pink disease, serum sickness, and treatment by protein shock and blood letting. Modern views on treatment have been admirably set out in many of the new sections, notably those on Addison's disease and gout. One of the most important and comprehensive articles in the volume is the account of radium therapy by Mr. Stanford Cade.

Where two authors have written under one heading the result is wasteful of space. Moreover, it is confusing to find one such author stating that in asthma injections of peptone are of doubtful value, whereas on the next page his coadjutor is evidently convinced of the opposite. Some of the subject matter has not been brought up to date. Nothing is more striking in modern therapeutics than the effect of a daily dose of Blaud's pill grs. 90 upon the microcytic achlorhydric anæmia of middle life; it is a little disappointing then, on being referred from secondary anæmia to chlorosis in this book, to find quite inadequate doses of iron recommended—for example, ferri sulphatis grs. 4 twice daily.

This edition has become bulky, and if the book were split into two volumes certain articles could be expanded with advantage. It is unfortunate that subjects like acromegaly and acholuric jaundice are given so little space—eight lines between them—whereas hyperthyroidism is given three pages. A good deal that is useful in therapeutics could be said about these two diseases, even in the space of half a page. But not only does the book cover the whole range of medical, surgical, and gynæcological practice from the point of view of therapeutics, the alphabetical arrangement of the subjects and the detailed accounts of treatment make it most suitable for ready reference by the practitioner. The system of cross references is excellent.

An Introduction to Gynecology.

By C. JEFF MILLER, M.D., Professor of Gynecology, Tulane University School of Medicine. London: Henry Kimpton. 1931. Pp. 327. 21s.

IN this elementary book, which is based on the author's course of gynæcological lectures to junior students, the teaching is orthodox and exceptionally clear. It has the disadvantage, however, that treatment is almost entirely excluded. Admittedly most text-books used in this country devote far too many pages to operative details which, although they furnish valuable anatomical exercises, can only be learnt properly at the operating table, and moreover are of little importance to those who do not operate. But pathology and treatment are too intimately connected for the one to be separated from the other, and the student will find his work more interesting from the outset if he is told something of the different methods by which morbid processes are attacked. An attempt has been made to explain the modern views on the function of the endocrine glands in the sexual physiology of the female, but the task, at the moment, is an ungrateful one because any account seems to be out of date as soon as it is written.

It is to be regretted that the Abderhalden reaction for pregnancy is not now ignored in text-books. This work of Abderhalden has never been confirmed and the test has never been used. Hardly any gynæcological work fails to mention this test, and hardly any gynæcologist has ever been known to use it. Surely it is time that it sank into the obscurity which it deserves, especially since the Aschheim-Zondek test is proving really useful.

The Essentials of Biology.

By JAMES JOHNSTONE, D.Sc. London: Edward Arnold and Co. 1932. Pp. 328. 16*s.*

Prof. Johnstone has given us a valuable book, whose title is over-modest if it suggests to the intending reader, by the word essential, that he will be offered only the skeleton of the science. The book presents a well-balanced account of the theories, their proofs and deductions, which make up our knowledge of animal biology, and although details in illustration are largely omitted, we have left a survey of the main results of the most recent work in biological fields, accompanying an epitome of recognised principles. Such a survey is particularly opportune, because biology has shared remarkably in the general development of scientific knowledge during the past fifty years, chiefly by the incorporation into its study of lessons derived from the equally progressive activities of histology, embryology, biometrics, and biochemistry. To this last Prof. Johnstone looks most hopefully as the source of new knowledge, at which no student of modern pathology will be surprised.

The book is divided into two parts, of which the first treats of the individual and the second of the race. In Part I. the organism is considered as a natural thing, the principles of structure, function, and behaviour are dealt with, and a notable feature in these chapters is the care with which all terms are employed, and the accuracy with which the definition of those terms is provided. As an instance a subsection on artefacts may be given. This word is often employed loosely, when it obscures the writer's meaning, leaving the student in doubt why these lifeless things belong to a different category than others which should be termed inanimate. In a section on types of organic structure we have, with the assistance of some neat diagrams, a synopsis of great clearness. No student could pass an examination on the subject by reading these notes, but if he were to use them as a synopsis to be supplemented by the study of one of the usual manuals he would find himself much aided. Indeed, this is typical of the book.

In the second part of the book two chapters, each of considerable length, will be thoroughly informing to many readers—that on reproduction and growth, and that on heredity. Defining heredity as "the progeny of an animal belonging to the same category of organisms as do its parents"—a definition which is admittedly incomplete—the thesis is amplified into a lucid essay on hybridity, Mendelian theories, and the transmission of characters, and is followed by a discussion of the hypotheses of transformism, such as natural selection, Lamarckism, and neo-Lamarckism. The book ends with a highly technical summary of the evolutionary career, and the suggestion that no results of modern biology will enable us to predict transformist processes. The future of the evolutionary career cannot be predicted, for evolution is essentially the appearance of novelties in a process. This is a really good book.

Regulation of Size as Illustrated in Unicellular Organisms.

By E. F. ADOLPH, Ph.D. London: Baillière, Tindall and Cox. 1931. Pp. 233. With 66 figures. 20*s.*

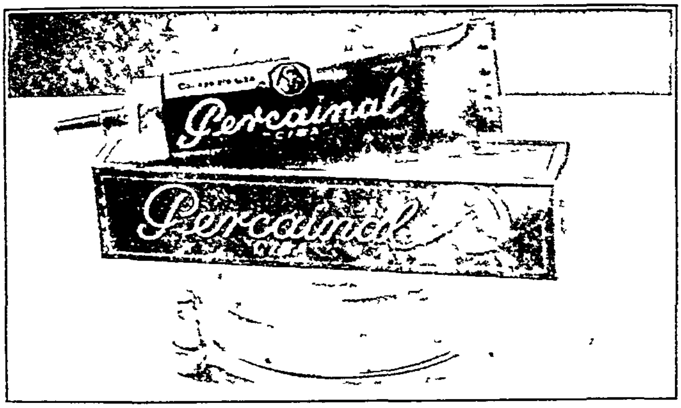
EVERY species of animal has a size which is proper to it, and a limit to the variation in size which is compatible with its existence: *Homo sapiens* cannot be as small as a rabbit or as large as a whale. Similarly in each group of animals there is an upper and lower limit: among terrestrial mammals the elephant and the pigmy shrew. What determines these sizes is one of the major unsolved problems of biology, and in this book Dr. Adolph has brought together the available facts and experiments in relation to the simplest forms—the influence of food, genetic constitution, and so on. The treatment is highly technical and the book will be of great service to students; there is a lengthy bibliography.

Female Sex Hormonology:

A Review. By WILLIAM P. GRAVES, A.B., M.D., F.A.C.S., *Professor of Gynæcology at* Harvard Medical School; Surgeon-in-Chief to the Free Hospital for Women and to the Parkway Hospital, Brookline. London: W. B. Saunders Co. 1931. 17*s.* 6*d.*

THIS is an interesting review of the recent developments in our knowledge of the internal secretions of the female sex glands, by a well-known American authority on practical gynæcology. The use of the word "hormonology" may give a wrong impression of the subject matter to English readers; the book is not a profound work but a simple readable account of the stages in the discoveries made by the various workers in this branch. The first few pages deal with the early history of the subject, and are followed by a brief description of the sexual cycle in animals, the discovery of ovulation, and the long and intensive search for the hormones of the ovary. The important part played by the hypophysis is next discussed, and five pages are devoted to the Aschheim-Zondek reaction for pregnancy and its clinical applications. Three chapters are devoted to new theories concerning menstruation, parturition, and lactation respectively, and a final chapter discusses organotherapy. The author confesses that at present very little is known about therapy, but claims that experimental findings are so promising that developments of the utmost importance may be expected in the future.

It is a pleasure to read a book by a clinician which gives an accurate picture of laboratory technique without over-burdening the reader with detail. Dr. Graves has evidently taken much trouble in selecting and verifying references, and the reader will find it easy to follow up the subject in any direction.



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THE LANCET.

LONDON: SATURDAY, MAY 28, 1932.

THE HOSPITAL ALMONER.

STATE and private enterprise in social service are linked by the work of the hospital almoner. n the annual report of the Institute of Hospital Almoners which has just been issued it is related hat there are now 76 hospitals in this country n which an almoner, trained by the Institute, s at work, and that there are 150 students in raining at various British universities. The modern almoner, unlike her mediæval prototype, s not merely a dispenser of charitable funds on behalf of another, an "amner to the poore that helpless cry." The nature of the work may vary according to the requirements of the hospital committee which appoints her, but the possible cope of duties is thus set out in the report. To acquire a knowledge of the patients' home conditions for the use of the hospital staff. To coöperate with other agencies in the provision of any requisite ordered, and generally to assist he patients in every way which will enable them to carry out thoroughly the prescribed treatment; and this may include not only convalescent treatment and the provision of instruments, but more extensive plans. To organise the after-care of patients on discharge. To maintain an adequate knowledge of the powers of State and municipal authorities, and to act in close coöperation with them in any matters which have a bearing upon the health and social conditions of the patients. If required, to discuss with patients and to collect their contributions towards the cost of their treatment. To check abuse of the hospital by patients who are (*a*) in a position to pay for private treatment; (*b*) insured under the National Health Insurance Act, entitled to the services of a panel practitioner, and not requiring special hospital treatment; (*c*) unable to benefit by any assistance other than that obtainable through public authorities. To administer Samaritan and other funds for the relief of patients, if called upon to do so. A glance at these duties will satisfy the most thorough-going advocate of social service.

Although inability to pay for the services rendered is not an essential part of the definition of social service, in practice such services are only intended for those who cannot afford them. At the same time the service is not necessarily a charity. In some form or other the patient has often contributed towards his treatment, and he is being asked to do so more and more every year either by some scheme of voluntary assessment, weekly contribution, or hospital savings scheme. He considers, too, that he has been obliged to contribute to his own treatment by indirect means, such as national health insurance payments, local rates and taxes, and he is quick to resent the suggestion that the hospital is a charity. In his mind it is a charity no longer any more than is the non-provided school to which he may send his children. Possibly it is this idea which is at the back of the public's mind in its lamentable failure to pay the hospital for the motor accidents, the treatment of which forms so large a part of the work of casualty departments. It is characteristic of the individualist outlook of the voluntary hospitals that no hard-and-fast rule has ever been laid down as to ability to pay. There is no instruction except that every case is a law unto itself, and it is left to the almoner to decide on its merits. This has never been an easy task for the almoner, and of recent years it has increased in complexity. The special departments which have developed with rapid strides during the last few years add much to the cost of treatment. A complete bismuth meal, biochemical investigations such as blood-sugar curves, artificial pneumothorax refills, and large chest radiograms are only a few examples of the manner in which the patient's treatment in special departments has increased the cost of administration; and these expensive items have to be paid for out of somebody's pocket, whether the hospital be State or voluntary. A patient who can perhaps just afford a doctor's fee cannot afford these extra charges and must seek the help of the hospital. These are problems placed upon the almoner, of which the public who contribute by rates or voluntary subscription know little or nothing. In the case of the voluntary hospitals the social service department is finding itself more and more in the position of a connecting link. There are many organisations—State, quasi-State, and voluntary—to which the patient may be and sometimes must be referred for help. As a rule he knows nothing of these posssibilities, and the almoner must direct and advise.

Few people realise how much raw material for research exists in the social service department. The investigations into the fate of children in tuberculous households, and into rheumatism in childhood, are concrete instances which may be cited, and there are numerous others. There are types of cases also which need a careful follow-up inquiry in order to establish certain facts of remote results. Such a task frequently falls to the lot of the department which possesses the necessary machinery for the work. And, lastly, there is looming in the not far distant future a reorganisation of the hospital out-patient department in which machinery must be devised to eliminate the long period of waiting which patients still so often have to undergo. Presumably some system of appointment as in private practice will be evolved. Here again to the social service department may well be entrusted the task of working the scheme. One such is already in operation at the Peto-place Clinic, where during the past year every attendance for treatment has involved a specific appointment, and in the majority of cases the patients arrived at the stated times and were not kept waiting.

Evening appointments give patients in the early stages of rheumatic disease the opportunity of treatment after working hours. Both these innovations enhance the hospital's opportunities for service. The objection is sometimes raised that a hospital cannot afford a social service department. It would be nearer the mark to say that a hospital nowadays cannot afford to be without one. It must be evident to all those who work in them that a large amount of the sickness which hospitals try to cure is preventable ill-health. In the future the work of the social service department will increasingly be that of investigation of the economic conditions of the patient, in the same way as the work of the pathological department is an inquiry into the causes of disease. In other words, the social service department is in reality a unit complementary to the medical, surgical, and pathological units of the hospital.

SIMPLE PNEUMOTHORAX.

A VALUABLE addition to our knowledge of the lung has been made by the publication of HANS KJAERGAARD's monograph[1] on Spontaneous Pneumothorax in the Apparently Healthy. The condition has been described in France as *Le pneumothorax des conscripts*, an expressive phrase which indicates the incidence of the malady among the young and apparently healthy. All observers are agreed that simple spontaneous pneumothorax represents a separate clinical entity, having no relation with the secondary pneumothorax that may result from the caseation of advanced tuberculosis, the breaking down of malignant tumours, or ulceration due to purulent disease of the lung. It falls like a bolt from the blue, as a rule gives rise to no complications, and heals spontaneously in the course of a few weeks. The cause of the accident has been a subject of discussion since McDOWELL published the first description of a case in 1856. There are difficulties in accepting either of the two theories which have been propounded to explain the origin of an apparently spontaneous accident, the rupture of an emphysematous bulla, or the ulceration of a subpleural tubercle. Emphysema is far more common in the second half of life than it is in the first. Further, spontaneous pneumothorax is seldom a complication of the pulmonary diseases which are associated with emphysema in early life. It occurs in the apparently healthy. On the other hand, if lung rupture of the type under consideration were due to the ulceration of a tuberculous focus, we should expect at least a proportion of cases to be followed by tuberculous pleurisy or by pulmonary tuberculosis. It is noteworthy that simple spontaneous pneumothorax is not the precursor of either. The rupture is sometimes recurrent, but even when recurrence occurs the patient remains free from any signs of tuberculous disease.

As simple spontaneous pneumothorax is rarely fatal there have been few opportunities for pathological investigation of the condition of the lungs. Dr. KJAERGAARD describes the post-mortem appearances as noted by various observers at six autopsies. In each case the cause of the pneumothorax was found to be the rupture of a solitary vesicle at the apex of the lung, but such an explanation is not always forthcoming. In some cases no cause can be demonstrated despite careful pathological investigation. If the rupture of an air vesicle is accepted as the usual cause of spontaneous pneumothorax, an explanation both of the formation of the vesicle and of its subsequent bursting is called for. A Japanese investigator, J. HAYASHI, at an autopsy on a patient who had had spontaneous pneumothorax, discovered small vesicles at the lung apex, near the bases of which scar tissue was seen. Microscopic examination proved that deformed atrophic lung tissue formed a valve-like structure at the base of the vesicle, permitting air to enter but not to leave it. It is easy to understand how in these circumstances increasing intravesicular pressure might result in rupture. Dr. KJAERGAARD has demonstrated similar vesicles in the lungs of persons who had not suffered from lung rupture, in two instances the pulmonary scarring being due to an old tuberculous fibrosis. It is thus probable that *pneumothorax simplex*, to adopt the author's nomenclature, is due to the bursting of valve-vesicles of a kind similar to those described. It is also possible that some of these structures are due to the apical tuberculous scars that are so often found at autopsy unassociated with any evidence of active disease.

Spontaneous pneumothorax is probably a less rare condition than it is usually supposed to be. Symptoms are seldom severe, and the practitioner who does not bear in mind the possibility of such an explanation of sudden thoracic pain may be discredited if his patient should feel that "a stitch in the side" is an inadequate explanation of his symptoms, and seek advice from a radiologist. The condition when diagnosed is sometimes wrongly treated by prolonged sanatorium residence. Whatever the ætiology of the disease it is not the precursor of phthisis, and treatment which may be appropriate for a tuberculous pleurisy should not be recommended. The patient should be reassured as to his future, rest need not be continued for long after the lung has fully re-expanded, and after a short convalescent holiday a return to work should be permitted, provided that the lung has completely re-expanded. Such a programme, however, obviously does not apply to the rare cases in which recurrent rupture, the effusion of blood into the pleura, the persistence of pulmonary collapse, or other complications demand special treatment and prolonged care.

A QUARTERLY HEALTH BULLETIN.

THE Health Organisation of the League of Nations which came into existence ten years ago publishes records of international conferences and other occasional papers, but has hitherto limited its regular output to a weekly fascicle and a monthly report on the world incidence of idemic and other diseases. In the monthly port, it is true, space is reserved for a more tended account of some disease of topical terest, but since the report circulates only mong medical administrations and health officers s scope as a medium for expressing the more eneral work of the health side of the League is stricted. Those who wish to follow this work ave been obliged to pick out for themselves e main features of health interest in the general ass of League literature—a task of no mean rder. To make this material more accessible nd consequently more widely known it has been ecided to embody it in a new periodical,[1] entitled e *Quarterly Bulletin of the Health Organisation*, ublished in two editions, French and English, he first number of which has just appeared. hose whose appetite is whetted by reading he articles which it contains can readily obtain he full literature on which they are based. The act that some of the articles are the first of a eries on the same subject should be noted. In ubsequent issues the contributions will no doubt ome to have a natural and well-understood order ; eanwhile the present issue serves to illustrate ow the Health Organisation touches many and aried branches of medicine.

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[1] Acta Med. Scand., vol. xliii., suppl.

The first article in the *Bulletin* presents the esolutions of the London conference of June, 931, on the value and use of immunising agents n the prevention of diphtheria, at which the nglish representatives were Sir Henry Dale, r. E. H. R. Harries, Dr. P. Hartley, and Dr. . A. O'Brien. These important resolutions, of hich we print the text on p. 1165 of our present ssue, commend themselves in the main to opinion n this country where there is general agreement rom experience amongst nurses in isolation ospitals and children in residential schools—otably those at Greenwich, Mitcham, and orwood—that efficient immunisation abolishes iphtheria. Resolution 2 puts in its right place the occurrence of reactions after injection of prophylactic, for in the immunisation of children little trouble is encountered whatever prophylactic be used. We cannot trace any significant number of reports of trouble in England from the prophylactics employed, and Dr. E. H. T. Nash showed as far back as 1924 that a group of children could be injected with formol-toxoid without suffering inconvenience. As Nash also found, it is amongst adolescents and adults, still unimmunised in this imperfect world, that undesirable reactions are likely to occur, particularly when formol-toxoid is used. Formol-toxoid (anatoxin) is recommended ; it is not clear how far the prophylactics most favoured in England, toxoid with antitoxin — either as mixture or floccules—are here included. The suggestion in Resolution 6 that when subcutaneous injection is not possible prophylactic may be applied to the nasal mucous membrane will probably surprise English workers. The conference resolved that it is unnecessary to carry out the Schick test before immunisation. There certainly are conditions, particularly in work on the large scale and where the natural positive rate is high, in which some administrators might feel free to discard the test, but amongst urban children, where more than half may be immune before presenting themselves for immunisation, and after immunisation, most of our own health officers prefer to use the test. The suggestion that immunisation should be postponed until after the child is twelve months old may be wise as a general rule, though since diphtheria is often met with in the second six months of life, some feel that immunisation should be commenced when children are six months old. The resolutions as a whole received the official approval of the Health Committee as long ago as October, 1931 ; they merit close attention from public health and school medical officers in the country and should be known to every practitioner.

The *Bulletin* contains a compendious report by Sir George Newman on medical education in England, the first of a series to be devoted to the study of problems raised by medical training in European and overseas countries—a study, we are told, arising out of a request made to the League of Nations by the Chinese National Government. The report consists of an introduction to the general conception of medical education, its function and purpose ; an account of the hierarchy of medical practice in England ; and a critical review of the existing system of medical education. A report by Prof. R. Burri, director of the Institute for Milk Industry at Berne, on the milk-supply in towns in the United States, is the outcome of a desire for further knowledge on the modern practice in milk control expressed at the International Conference on Rural Hygiene held at Geneva in June, 1931. Lieut.-Colonel A. G. McKendrick reviews the results of anti-rabies treatment as practised at the various Pasteur Institutes of the world. This is the second analysis of its kind carried out on behalf of the League in pursuance of a decision taken by the International Rabies Conference which met at Paris in 1927. Of 69,707 persons treated for whom records were available (of whom no less than 53·5 per cent. were Europeans) 333 died of rabies, a mortality of 0·48 per cent. Of the biting animals 87 per cent. were dogs. The figures submitted indicate a probable advantage in favour of the modified dilution methods of Hogyes and Hogyes-Phillips. In an article on tropical pneumonia, Dr. R. Gautier, a member of the Health Organisation, deals fully with the ætiology, prevention and treatment of this malady, whose case-mortality may be as high as 58 per cent. He advocates a plan of campaign to study the peculiar susceptibility of natives to the pneumococcus and of the types of pneumococci existing in the various tropical countries so as to allow in future for the use of homologous vaccination and serotherapy. Finally, there is a report by Dr. Rajchman, medical director of the Health Organisation, on the work undertaken by the League to protect the population endangered by the recent floods in China.

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[1] London: Allen and Unwin. League of Nations Publications Department. 2s.

ANNOTATIONS

THE RESURRECTION MEN.

A PICTURE of the more famous crimes associated with the activities of the resurrection men, and entitled "The Inhumanists,"[1] suggests the question why those activities have become of topical interest. Did Dr. McBride, in the terrible little play which we recently reviewed in these columns and which was afterwards played with success in a London theatre, popularise body-snatching as a theme for a drama, or did he respond to the feeling that at the present moment the public were curious concerning a subject which 100 years ago was of terrible import? Mr. Turner sketches correctly the circumstances both of the law and of medical education which led to dead bodies becoming an article of merchandise to be dealt in by those in charge of anatomy schools on one side and the disreputable order of Jerry Crunchers on the other. He goes on to narrate with horrid detail the methods taken by resurrection men and the counter-measures of the forces of the law, finally relating a series of sensational crimes. We have here something of the skill of Poe in painting lurid pictures, and the excerpts from the diary of Joseph Naples, in possession of the Royal College of Surgeons of England, rival anything Poe ever wrote in their cold horror. In this diary a leading resurrectionist records his activities as body-snatcher and gravedigger, setting down his crimes as the items of a day's work. In one chapter Mr. Turner draws an analogy between the methods of the modern American gangster and those of the London resurrectionist a hundred years ago, which shows how seldom a precedent cannot be found for the law-breaker. "Like modern American racketeers," he writes, "rival gangs of resurrectionists had allotted territories both for producing and marketing, but these arrangements fell to pieces as the supply failed to keep pace with the demand, and ruthless inter-gang warfare broke out. The paramount corpse king would fix famine prices and ask as much as 20 guineas for a single body. A rival gangster would offer supplies at a lower price and obtain the contract, as it were, but as soon as the corpse king knew of it the price-cutter would be shadowed day and night until an opportunity occurred to betray him to the police in the act of exhumation, and he would be put out of the way for six months or so." An impulse to write "The Inhumanists" seems to have been the author's feeling that Edinburgh is wrongly accused of having been the original centre of the body-snatching trade—a reputation acquired by the tremendous excitement over the Burke and Hare murders—whereas, says Mr. Turner, London was the real centre, one famous London surgeon being the mainspring of the trade. To-day the enlightened coöperation of public authorities, kept alive by the official inspectorship of anatomy, ensures the supply of subjects to medical schools.

A NEW FACTOR IN THE CAUSATION OF OSTEOMALACIA.

LAST year in our columns Dr. Dagmar Wilson gave a very interesting account of osteomalacia in the Kangra Valley in India. Osteomalacia in India as a whole attacks women, and amongst women only those whom the custom of purdah confines to the house, but in the Kangra Valley there are two outstanding peculiarities: men as well as women, and field workers as well as people keeping to the house, are affected. Clearly some new factor must come into play. The most likely contributory factor would be a salt deficiency, a deficiency of calcium or of phosphate in the diet, of so severe a degree as to leave the body in negative calcium balance, even though exposure to the sun was quite considerable. In cattle such a state of affairs, due to a phosphate deficiency in the pastures in certain parts of the world, is well known. Since last summer Dr. Wilson has put this theory to the test, and relates in our present issue that in the case of persons not starved of sunlight a daily dose of tricalcium phosphate caused rapid alleviation of the painful symptoms, but that in those deprived also of sunlight the addition of the salt caused little benefit; in the latter case the deficiency would be a dual one, of vitamin D and calcium or phosphate, and correction of the salt deficiency alone would not effect a cure. The season at which the cures took place is not mentioned, but presumably there is no likelihood that they could be attributed to change of season, as was, for instance, the case in untreated cases of hunger osteomalacia in Vienna in the post-war years. Dr. Wilson is indefatigable in her efforts to help these suffering people as well as in the pursuit of knowledge, and her work has the additional merit of being truly practical, in that she constantly endeavours to find means of making up these dietary deficiencies which shall be so cheap as to be easily accessible to the poorest in India. Thus she has also made trial of sun-irradiated yeast as a source of vitamin D, and finds that it is efficacious in those cases of osteomalacia where there is a deficiency of that vitamin, such cases being, as has been pointed out, the vast majority of those which occur in India.

NORMAL GASTRIC ACIDITY.

EXTREME variations in gastric acidity are known to occur in normal individuals and to be compatible with perfect health. No normal constant value is therefore available and this is a serious disadvantage in interpreting the results of test-meal analyses. Hyper- and hypo-chlorhydria are purely relative terms, compared with an "average" degree of acidity as judged from a number of analyses; but for any individual "average" acidity is not necessarily the normal. Moreover, varying types of test-meal curves may be obtained in the same individual under different circumstances. Factors influencing the curve include the type of meal and the age of the patient. Attention has lately been focused upon the changes that may normally occur with advancing years. Some workers at the Mayo Clinic have examined[1] the results of gastric analyses in 3746 persons in whom they were satisfied that no disease affecting gastric secretion was present. The test-meal employed was a mixture of "eight arrowroot cookies and 400 c.cm. of water," and in general the one hour sample was used for analysis; in some cases histamine was used in addition as the stimulus. The conclusions drawn are as follows: Free gastric acidity appears to increase rapidly from childhood up to the age of 20 years; in men the average free acidity, at one hour, lies within 45 and 50 units

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[1] The Inhumanists. By Cecil Howard Turner. London: Alexander Ouseley, Ltd. 1932. Pp. 286. 8*s.* 6*d.*

[1] Vanzant, F. R., Alvarez, W. C., Eusterman, G. B., Dunn, H. L., and Berkson, J.: Arch. Int. Med., 1932, xlix., 345.

(c.cm. of N/10 sodium hydroxide required to neutralise 100 c.cm. of gastric juice) between this age and 40, after which it falls to a level of about 30 to 35 units. In women 30 to 35 appears to be the normal level throughout adult life. At the age of 60 some 28 women in every 100 fail to show any free acid on fractional analysis and 23 per cent. of men are similarly achlorhydric. Other workers have also noted this high percentage of achlorhydria in normal persons over 60 years of age, and it has been suggested that this is the result of a senile atrophy of the gastric mucosa. The authors of this investigation attribute it to a hereditary tendency rather than to a morbid process.

These studies of gastric acidity certainly provide useful data for future comparison, even if the hope of the authors that they will be now able to "detect with certainty small abnormalities in the secretory power of the stomach due to disease," is not realised. It is difficult to believe that small variations in gastric acidity would ever be of great practical significance. As our knowledge of gastric secretion increases it appears more and more probable that gastric acidity is at least in part dependent upon a general condition of the body. For example, the high acidity common in duodenal ulcer is more likely to be the predisposing factor to the formation of the ulcer then a reflex effect produced by the ulcer. It is significant that the highest acidity is normally found in men between the ages of 20 and 40, at which time the incidence of duodenal ulcer is highest. As we have already observed[2] it is possible that gastric acid secretion provides one means of maintaining the acid-base equilibrium of the body, and is thus subject to variations in the blood and tissues outside the stomach. The data here recorded may therefore be regarded as suggesting rather the soil upon which ulcer or carcinoma, for example, may develop, than as providing a set of standards for the comparison of the changes found in gastric disease. The narrow view that various types of test-meal curves are produced by local disease in the stomach and are diagnostic of such disease is giving way to a broader conception of a gastric "constitution" upon which disease tends to form.

THE POSITION OF MEDICAL RESEARCH.

The Journal of the Research Defence Society, entitled the *Fight Against Disease*, contains in its latest issue an analysis of the 1876 Act (Act 39 and 40 Vict. cap 77) under which research involving the use of living animals is permitted in this country. Medical progress has been impeded, and research workers have been harassed with malevolent accusations against them, by vigorous antagonists, but many, if not all, of the points upon which public opinion asks for information will be found in the wording of the Act, whose relevant passages are cited in the journal. Restrictions upon the performance of experiments on living animals are categorical, and so are the provisions under which in certain cases these restrictions may be modified. The issue of the licences, making the research work legal, is carefully controlled, and prompt legal proceedings can be taken against the author of any experiments in contravention of the Act. The public is gradually appreciating in greater measure on which side truth lies, and the recent action of the Anti-Vivisection Hospital makes it clear that the opponents of experimental research, some of them at any rate, realise that inhumanity may result from actions which are taken expressly in the cause of humanity. The authorities of this hospital are now prepared to empower the administration in their hospital of anti-tetanic serum in accordance with accepted medical knowledge, and the London County Council has withdrawn accordingly its embargo against the taking of accident cases to the institution by their ambulances. The journal announces that Sir Arthur Keith will give the next Stephen Paget memorial lecture at the annual general meeting of the Society on Wednesday, June 15th, in the lecture hall of the London School of Hygiene and Tropical Medicine.

CONTROL OF SCARLET FEVER IN INSTITUTIONS.

Until a few years ago the measures available for the control of an outbreak of scarlet fever in an institution or in a children's ward were limited to the removal of clinical cases to an isolation block or the fever hospital and the quarantining of those exposed to the disease. The occurrence of dropping cases at irregular intervals might prolong this period of quarantine indefinitely, and meanwhile the work of the institution or ward was badly hampered. Save by a few rare spirits, the hæmolytic streptococcus described by the Dicks has been accepted, upon evidence which is really overwhelming, as the causal organism of the disease. As M. L. Blatt and M. L. Dale[1] point out, the subsequent discovery by the same workers in 1924 of the production of a specific toxin and of its antitoxin have together permitted of a rational scientific programme for controlling the disease. Most of the measures now available are in routine use in many fever and children's hospitals in this country and have been described in our columns by R. A. O'Brien.[2] They were employed systematically and successfully by Blatt and Dale in the control of an outbreak in an infant and maternity hospital in Chicago at a period when scarlet fever was very prevalent in that city. The significance of periods as long as 19 and 14 days between the first four cases did not at first suggest anything unusual to them, but a fifth case occurred at a further long interval under conditions which suggested that adult carriers having access to any of the five floors of the institution were the means of transmission. Thereupon rigid preventive measures were instituted. All clinical cases had been already removed to a fever hospital. The adult patients and staff, amongst whom were discovered seven with positive cultures, were required to wear, except at meals which they took together, gauze masks until three platings upon blood agar could be shown to be negative for hæmolytic streptococci. Children with positive cultures were isolated in special wards on their respective floors. A Dick test was performed upon everyone in the hospital. Three children amongst those who had been in most recent contact with the last cases were found to be positive reactors. These were passively immunised with scarlet fever antitoxin and a week later active immunisation by means of multiple skin test doses of toxin was begun. All other positive reactors amongst patients and attendants, except three very young infants, were actively immunised. The last case of scarlet fever developed two days after these measures were taken; significantly, in a positive reactor who had not received antitoxin. The institution was not closed to admissions, but during the succeeding six weeks Dick tests were done and cultures obtained in the case of all new entrants, and if necessary immunisation was carried out. No further cases developed. Commenting on the procedures Blatt and Dale note that the Dick toxin used for active immunisation produced severe reactions in many older children and adults although, with one exception, active immunity was brought about in a month by five graded doses of toxin at five day intervals. Of the 176 children originally tested 43 (24 per cent.) were positive. It was possible to retest 56 of the original 176 infants six months later. The others had presumably left the hospital. Of 13 originally immunised Dick-positive reactors a four months old infant, negative one month after immunisation, had again become positive. Of 43 original Dick-negative infants five gave a positive test six months later. These "mutations in skin reactivity" in this small series of infants are doubtless to be explained in the same way as similar changes in the sign of the Schick test in infants. They are due in the one case to the inhibiting effect of maternally transmitted passive immunity upon the production of active immunity and in the other to the gradual waning of this passive immunity as the months pass.

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[2] The Lancet, Jan. 2nd, p. 29.

[1] Jour. Amer. Med. Assoc., April 23rd, p. 1437.

[2] The Lancet, 1929, ii., 296.

THE CAUSES OF FILARIAL SYMPTOMS.

In a paper read at Manson House, before the Royal Society of Tropical Medicine and Hygiene on May 19th, Dr. F. W. O'Connor, of the Presbyterian Hospital, Columbia University, New York, dealt with the factors which underlie the disease syndrome in infection with *Wuchereria bancrofti*, as its valid name now is. Having pointed out how the original conception, that the symptoms of filariasis were due to the filaria, had tended to give place to one implicating bacteria as essential in causation, he marshalled evidence, much of it new, against this conclusion. He first pointed out the territorial correlation between the symptoms, the filaria, and the local insect vector, and the striking lack of correlation between chronic filariasis and bacteria; strengthening his argument with similar instances in other lymphatic diseases. He surveyed the bacteriological studies made in connexion with filariasis, and showed how often, even in acute filarial lymphangitis, cultures from blood and from local material have been sterile; and it is of course the many instances of failure by experienced bacteriologists to grow bacteria which are here of positive importance. The successful instances he attributed to secondary infections of the skin caused by the scratching induced by the intense irritation found in this condition so soon as acute symptoms cease, scratch marks being a striking feature of these cases. Next followed the inquiry as to whether the clinical and pathological features of filariasis were such as to establish the responsibility of the parasite for them. His reading of the histological evidence is that, provided there is lymphatic obstruction higher up, living worms produce a polypoid endothelial proliferation of the lymphatic vessel in which they live, which stops short of complete occlusion but nevertheless often suffices to kill the parasite; when, however, this dies complete occlusion may be expected. The share of the daily death and daily destruction of microfilariæ (for evidence in that direction accumulates) in the production of ill-effects needs further study. Regarding attacks of acute lymphangitis, the conclusion was reached that they are allergic, and correspond to a moment when death of worms liberates sufficient protein to overcome the resistance set up by previous sensitisation. For the reality of hyperfilariation—a matter which had been constantly in Sir Patrick Manson's mind, of its apparent commonness in young people in endemic areas, and of its ability to produce directly or indirectly the blockage which results in elephantiasis and other lymph stases, Dr. O'Connor gave striking evidence. The cumulative effect of the steps in his line of argument—that the filaria is the essential cause of the symptoms constituting the filarial syndrome—was impressive and met with acceptance.

Perhaps the most striking point which came out in the subsequent discussion was the difficulty of drawing safe general conclusions in the present state of knowledge. In Grenada, for instance, the ordinary insect host is present and can be infected, but the disease is absent. We are ignorant of what happens to the microfilaria in the cryptic hours between midday, the hour about which, as Dr. O'Connor's investigations indicate, parturition takes place when there is microfilarial periodicity, and midnight, the hour about which the numbers of these larvæ reach their height in the blood. The different aspect of the filarial syndrome in different geographical areas was mentioned, with the suggestion that the details of the lymphatic system had not perhaps precisely the same structure in different races of man. That the presence of elephantiasis was accompanied by hitherto unsuspected biochemical changes was shown by a cited instance in which skin reactions to the dirofilarial antigen of Hamilton Fairley (see p. 1167), markedly different from the normal, developed when it was injected into elephantoid skin. The further investigations which Dr. O'Connor is about to carry out in Porto Rico are being undertaken in the hope of advancing knowledge on these and kindred matters by an extension of the methods which in the hands of his technical staff have already given such fruitful results.

VITAMINS AND RADIATION.

Vitamin research has for many years engaged the attention of physiologists and biochemists and has of late been a field of work chosen by pure organic chemists. The progress recently made towards the identification and preparation of these once mysterious substances has been astonishingly rapid, so much so that a stage has already been reached when profitable attempts may be made to determine their actual molecular structure. Physical chemists are now taking up this problem, and F. P. Bowden and C. P. Snow,[1] of the Laboratory of Physical Chemistry, Cambridge, have lately reported a series of experiments which promise to shed light on the constitution and possible methods of production of the vitamins. They employ photochemical and spectroscopical methods to follow the changes which take place in the structure and properties of certain of the vitamins and pro-vitamins as the result of exposure to radiations of strictly defined wave-length, the essence of their technique being to employ monochromatic light as the source of radiation instead of using light filters. Their results already suggest that they may have accomplished the actual conversion in vitro of the pro-vitamin carotene to vitamin A. On spectrographic analysis carotene shows characteristic absorption bands, one of these being situated at 2700 A. A solution of carotene was exposed to radiation of about this same wave-length—namely, 2650 A, selected from the spectrum of mercury.

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[1] Nature, May 14th, p. 720.

er a few hours of such irradiation a new absorp- band appeared in the spectrum of the solution, ated at 3280 A, and an absorption band in this ation is fairly generally recognised as character- c of vitamin A. The obvious presumption is that otene has been converted to vitamin A by the diation and further work is now in progress to ermine by other methods, including biological periments, whether this conversion can in fact proved.

The new work brings to mind at once the ll-known method of producing vitamin D by diation of its parent substance ergosterol. Just it has long been known that exposure to radiations short wave-length can destroy vitamin D as well bring about its synthesis, so it now appears that amin A can be destroyed by exposing it to radiation suitable wave-length. Similar results were obtained h vitamin B_1; it was apparently possible to stroy the activity of Jansen and Donath's "crys- line vitamin B_1" by subjecting it to radiation 2537 A. It seems possible that the monochromatic ht technique may lead to important advances in owledge of the constitution of the vitamins.

ANOREXIA NERVOSA.

IN the tenth annual report of the Cassel Hospital : Functional Nervous Disorders the medical director ves a summary of the 13 cases of anorexia nervosa at have so far been treated at Swaylands. He fers that the prognosis is good, that a comparatively nple treatment alone is necessary, and that the ndition is a psychological one with no primary ysical problems. He lays stress on the clear defini- on of the syndrome, and corroborates the description it given by the Medical Society of Individual sychology.[1] It has, he says, seven characteristics, hich were present in all his cases. The three sitive symptoms are anorexia, loss of weight ometimes carried to the point of emaciation), and nenorrhœa; three other characteristics are that e patient is female, unmarried, and of an age etween puberty and about 24; and a constant egative symptom is that, despite her "deathly ppearance," she stoutly maintains that she is never red. Dr. T. A. Ross's insistence on the monosexual cidence is interesting. At a discussion held by he Medical Society of Individual Psychology in the pring of last year,[2] Dr. W. Langdon Brown described ur male cases, and Dr. G. Gordon described mild ases among men over 30 in suicidal wards; but r. Ross points out that young men sent to hospital ith anorexia and emaciation without physical lesion re, as a rule, the subjects of grave mental disease ith delusions, and are therefore in a different ategory. Dr. Gordon was obviously referring to rankly psychotic cases, and Dr. R. D. Gillespie[3] ays that he has never seen the symptoms "in pure ulture" in a man. Dr. Ross qualifies the restriction o unmarried girls by admitting that he has met ocially a married woman obviously suffering from he disorder, but that she was childless; Dr. Langdon Brown related adult cases in married women, but these seem to be rare. Dr. F. G. Crookshank, in the discussion mentioned, distinguished the reaction in young persons as a move towards independence, and in adults over 30 as constructive suicide. It is the experience of the Cassel Hospital that patients are not brought under care until they have been ill for many months, and it has become a point of honour to continue the illness. Deep psychological examination has not proved to be necessary, but on superficial examination most of the patients have shown a dread of becoming fat, and a few have been afraid of becoming conspicuous through development of the breasts. Although dominance of the mother was found to be important, in accordance with the experience of speakers at the discussion, Dr. Ross says that in some cases the parents were meek enough; that anything might upset the equanimity of these patients and the condition could not be correlated with anything specific. One patient appeared to have been jealous of a brilliant brother, and to have desired to attract attention. The case-histories have failed to explain the amenorrhœa; the stoppage does not seem to be the result of the emaciation and the menses often do not return until some months after recovery. Eleven out of the 13 patients did well, and the details given in the report are of great interest. Parents nearly always report improvement in disposition as well as in physical state. Treatment is based on the Weir-Mitchell method of rest in bed and increasing diet, absolute isolation from family and friends, and massage. A nurse should watch for the first few weeks to see that food is swallowed, but patients coöperate heartily in the treatment once they realise that the doctor is in earnest. No reliance is placed on elaborate systems of diet such as the one recommended by Dr. R. S. Allison and Dr. R. Picton Davies.[4] The two patients who did not become well cannot be called failures; one gained 10 lb. in six weeks and was then obliged to go abroad and has not been heard of since; the other has been at work since discharge but is thin and a food faddist.

PENTOSE NUCLEOTIDE IN LEUCOPENIA.

AT a meeting of the American Association of Physicians, held at Atlantic City on May 4th, further successful results in the treatment of certain intractable forms of anæmia were reported by Dr. Henry Jackson, Jr., and his collaborators at Harvard. They had previously recorded [5] the treatment of 20 cases of agranulocytic angina and other forms of malignant neutropenia with Nucleotide K96,[6] and since that time an additional 38 cases have been treated by them by the same method, no other specific treatment being used. Of these 58 patients, 43 suffered from typical agranulocytic angina, 13 from extreme leucopenia following sepsis, and 2 from very severe benzol poisoning. In all 41 recovered completely, including 28 in the first group, 11 in the second, and both cases of benzol poisoning. The prognosis did not seem to be affected even by a white cell count below 1000, complete absence of polymorphonuclear neutrophils, or extreme hyperpyrexia. The method of treatment is as follows: 10 c.cm. of the preparation is injected intramuscularly twice a day until the white cell count has definitely risen. An injection of 10 c.cm. is then given intramuscularly once a day until the count has been essentially normal on at least three consecutive days. Thereafter the patient is watched for a possible relapse. In certain resistant cases a rather larger dose led to a distinct increase in white blood-cells, when the usual dose had not been effective. As a rule few if any untoward reactions are observed;

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[1] Individual Psychology Publications, Medical Pamphlets, No. 2., London.

[2] THE LANCET, 1931, i., 865.

[3] Ibid., p. 995.

[4] Ibid., p. 902.

[5] Jackson, H., Jr., Parker, F., Jr., Rinehart, J. F., Taylor, F. H. L.: Jour. Amer. Med. Assoc., 1931, xcvii., 1436.

[6] Obtainable from Messrs. Menley and James, 64, Hatton-garden, London, E.C.1.

but occasionally nausea, precordial distress, and dyspnœa occur, and much more rarely there may be a rise of temperature. Clinical and hæmatological improvement are said to occur consistently about five days after treatment is instituted, irrespective of the previous duration of the illness. The preparation appears to be of no value in leukæmia, aleukæmic leukæmia, or aplastic anæmia. This is important in so far as the differential diagnosis between agranulocytic angina and aleukæmic leukæmia is not easy without examination of the bone-marrow. Toxic symptoms following arsenobenzol therapy are now happily rare, but as we pointed out two years ago[1] agranulocytosis is probably far commoner than the number of cases recorded would suggest. It has hitherto proved fatal in a large proportion of the cases diagnosed, and the results recorded by the Harvard workers with nucleotide are therefore most encouraging.

AGE OF DENTISTS.

In the course of his twenty-second address from the chair at the Dental Board of the United Kingdom, Sir Francis Acland gave some interesting figures which had been got out in his office as to the ages of dentists registered under the Act of 1921. Their average age is 47¼ and the average expectation of life of persons of this age is 22 years. "I am afraid," said Sir Francis, "to dogmatise about averages, for I do not visualise them in a concrete form like the boy who said they were 'things hens laid eggs on,' and therefore I cannot say whether this means that this is the average expectation of life of persons of this *average* age, nor whether the figures mean that in 22 years half the total number, which is 6748, will probably still be alive." It may be of interest, he added, to give the numbers in different age-groups. There are 5 between 80 and 84 years, 103 between 70 and 80, 687 between 60 and 70, 1683 between 50 and 60, 2676 between 40 and 50, and 1594 between 32 and 40 years.

THE CAROTID BODY.

In an annotation last week we quoted the statement that Czermak was the first to note that compression of the vasculo-nervous bundle in the neck produces slowing of the heart beat. But, as Sir Thomas Lewis points out in a lecture on vasovagal syncope and the carotid sinus mechanism,[2] this observation was really made by Caleb H. Parry, who described it in his Inquiry into the Symptoms and Causes of the Syncope Anginosa, commonly called Angina Pectoris (1799). In his lecture Lewis brings forward the interesting hypothesis that the central and efferent parts of the carotid sinus reflex mechanism are disturbed in the syndrome of common fainting attacks —or, as he calls them, vasovagal syncope—in which strong vagal effects are combined with depressor vasomotor effects. In support of this he suggests that the alimentary symptoms associated with vasovagal syncope may be the result of alteration in the alimentary tract movements previously noted by Danielopolu to take place when pressure was made on the carotid sinus—namely, an initial inhibition followed by increased activity of the stomach. The form of syncope to which he refers should be distinguished from the "vasovagal" attacks described by Gowers in which consciousness is seldom or never lost. Dr. J. A. Ryle,[3] however, defends the latter use of the term, since his experience suggests that both vagal and vasomotor phenomena form part of Gowers's syndrome.

ÆTIOLOGY OF ALOPECIA AREATA.

Of all dermatological problems none is more provocative than alopecia areata. The current theories of its causation are generally familiar. There is focal sepsis in teeth, tonsils, and alimentary tract; Jacquet's dental reflex hypothesis; the older theory of exogenous infection; trophic nervous disturbance; and finally an endocrine vago-sympathetic syndrome. But none of these suffices to explain the symptoms in a scientific sense. Armas Cederberg,[1] of Helsingfors, holds that of all concurrent or associated manifestations oral sepsis appears to be the commonest, and this is perhaps true. But the association does not imply that the sepsis is to blame for the alopecia, and Sabouraud in his latest monograph on the subject[2] cites more than one unhappy case of total dental clearance without a particle of benefit to the hair loss. H. W. Barber, on the other hand, has seen recovery after tonsillectomy and the use of a streptococal vaccine, and it has certainly become the custom in English clinics to examine the mouth and throat in every case of alopecia areata and usually in vitiligo too. Cederberg, however, is not content with the streptococcal as the specific element in causation. According to his researches, oral and dental spirillæ are the true cause, and reach the lymph channels and the general circulation either through microscopic abrasions of the mucous membrane, or in symbiosis with other organisms. A further stage in the thesis asserts that spirillar infections are characterised by a characteristic affinity for the pigment and pigment-forming apparatus of the skin, whether manifested by hyperchromia or a deficiency in that respect, as in vitiligo. The most obvious example of such cause and effect is the case of syphilis, in which modified types of alopecia and vitiligo are both observed, while a spirillar (not spirochætal) balanoposthitis is not infrequently followed by more or less permanent local leucoderma and marked disturbances of the genital pigment distribution. For direct proof of the ætiological rôle of spirillæ in alopecia, their demonstration in situ is necessary, and Cederberg claims to have succeeded in several cases after prolonged search. He submits two microphotographs in support of his claim, taken from sections of a recent case of alopecia areata. Single organisms are observed, stained by the Levaditi process in the interstices between epithelial cells, and in the lymph channels both in the epidermis and the derma. Groups or colonies are also evident, and the polymorphism suggests treponemata and leptospirillæ. In the basal cell layer the place of the normal pigment appears to have been taken by the stained organisms. Of greatest interest is their presence and apparent growth along the walls and in the sheaths of hair follicles, where a toxic pilopapillitis explains the resulting hair loss and occasional destruction of the hair follicle. It cannot be definitely ascertained at present whether the cell itself can be penetrated, but it is clear that the pigment-forming cells are highly susceptible, a fact which sustains Sabouraud's original observation that in alopecia areata the ordinary tissue reactions and proliferations are of the slightest. "Toutes aussi concordent à témoigner d'une intoxication locale profonde."

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[1] The Lancet, 1930, ii., 1405.
[2] Brit. Med. Jour., May 14th, p. 873. [3] Ibid., May 21st, p. 956.

[1] Derm. Woch., 1932, No. 16, p. 539.
[2] Pelades et alopécies en aires, Paris, 1929.

SPECIAL ARTICLES

EDICAL RESEARCH AND PATENT LAW.

UNANIMOUS CONCLUSIONS.

HE conference on medical research and patent , called by the Council of the British Medical ociation, has held two meetings, at the first of ich Dr. R. Langdon-Down, who presided, said t the Association had reached an impasse in its discussion of the principles involved, and was iting the coöperation of others in reaching clusions. The conference was made up of resentatives as follows :—

oyal College of Physicians of London : Dr. ence East, Prof. C. Lovatt Evans, and Dr. Robert tchison.

oyal College of Surgeons of England : Sir Charles don-Watson, Mr. R. G. Hogarth, and Sir Holburt ring.

edical Research Council : Sir Henry Dale, Sir lter Fletcher, and Prof. J. J. R. Macleod.

ritish Medical Association : Sir Robert Bolam, C. O. Hawthorne, Dr. Arnold Lyndon, and Mr. S. Souttar.

t its second meeting (on May 18th) the conference n came to unanimous agreement on four resolu- ns put forward by Sir Henry Dale, Sir Walter tcher, and Mr. H. S. Souttar, which, after some bal amendment, were carried in the following m :

. That this conference is of opinion that the granting further patents in the medical field is undesirable in the lic interest, and would welcome any action to prevent regulate such further grants by international agreement.

. In the opinion of this conference, experience has wn that research and discovery have been hindered her than promoted by the granting of patents for inven- ns dealing with the following classes of substances used therapeutics and practical dietetics : serum, toxins, igens, viruses, bacteriological products, active principles ural to the animal body, vitamins. They consider it irable in the interests of medical science and practice, t no further patents should be granted for inventions ling with the manufacture of such substances for use in dicine or dietetics. If patents are granted for methods manufacturing such substances for other uses, they sider that manufacture for use in medicine should be mpted from the operation of such patents. They would e amendment of the law to secure these ends.

3. The members of the conference are not convinced t the granting of patents for the synthetic preparation new substances, for use in therapeutics, has been similarly rimental. They further appreciate the possibility that ne-sided and purely national abolition of such patents ght unjustly penalise commercial enterprise in this country. ey would gladly see a mechanism established by which tents for inventions in the medical field, other than those ecified in (2), could be dedicated to the use of the public this country, while affording the requisite priority of tion in other countries.

4. Until some such dedicatory system is established, e members of the conference think that the special position ld by medical men in the community renders it undesirable at they should apply for patents in the medical field.

EFFECT OF THE RESOLUTIONS.

The first of these resolutions is a general expression the unanimous opinion of the conference that the tenting of discovery and invention in the medical ld, whether by medical men or others, is not in the blic interest. The second and third suggest a actical means of dealing with a situation which n only be effectively modified by legislative action, hile the fourth defines the line of action which, in e view of the conference, should and can, in existing rcumstances, be taken by members of the profession.

The salient feature of the practical propositions ntained in the second and third resolutions is the distinction made between animal compounds as defined in the second, and synthetic chemical products dealt with in the third. The difference suggested in the treatment of the two groups is admittedly a compromise, but it was felt by the conference to be a wise and practicable one. It was clear that the strongest grounds for complaint against the actual working of the existing patent law in the medical field had been given by patents for the substances described as serums, toxins, antigens, and the like. There was overwhelming evidence that patenting under this head had in practice proved a hindrance to progress rather than that stimulus to research and invention which it is supposed to afford. Even those concerned on the commercial side with substances used in therapeutics and practical dietetics agree in general that the application of such patents has been detrimental to British commerce. Accordingly it was suggested that no further patents should be granted in this group.

On the other hand, it was admitted that in the case of the production of new substances by the processes of synthetic chemistry a stronger case could be made out for the protection of British manufacture by patents similar to those granted in other countries from which rival products were forthcoming. Indeed, while practical experience had shown that for the substances covered by Resolution 2, patents had been an unmitigated nuisance, there was some ground for the view that the progress of synthetic chemistry in Germany had been successfully fostered by patent law. It was therefore suggested that, in connexion with this second group of products some provision might well be made for the dedication of patents to the use of the public in this country without affecting the attainment of the requisite priority of action in other countries. It was realised that to ask the Government to abolish all further patents over the whole of the medical field without reference to the practice in other countries would be useless, however desirable the end in view might be in the opinion of the members of the conference and those whom they represented; but it was felt that the adoption of the distinction explained above should make it possible to obtain some immediate improvement in the existing position.

The memorandum issued by the Medical Research Council[1] was quoted at the conference as having drawn a similar distinction between the substances referred to in Resolutions 2 and 3, and as making out a very effective case for the differentiation now proposed. In support of the distinction, a member of the conference emphasised the point that the knowledge of the processes upon which the introduction of forthcoming products depended was at present so fluid that the only kind of patent which could be obtained under the first head was likely to block further research in that direction. When a process of synthesis having to do with a substance of known constitution was concerned, however, the danger was much less. Blocking patents had been taken out in synthetic chemistry, but to nothing like the same extent.

THE NEXT STEP.

The conference discussed what steps could be taken to make these resolutions effective, and immediate action was deemed desirable, in view of the stage already reached in the progress of the Patents and

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[1] See THE LANCET, March 12th, p. 575.

Designs Bill through Parliament. For this reason it was agreed that, although the resolutions of the conference are subject to endorsement by the Council of the British Medical Association, they should, as the opinion of the conference itself, be communicated in the meantime to the Ministry of Health, the Board of Trade, and the medical Members of Parliament. They will be submitted, in addition, to the bodies which sent representatives to the conference.

THE BRITISH SPAS:

AN APPRECIATION.

STATEMENT No. 3, issued by the British Health Resorts Association,[1] says that although there are many waters in the British Islands (Dr. Rutty in 1757 described 131 sources of medicinal water in Ireland alone), there are at present only 12 actual spas—that is to say, places where natural medicinal springs are installed in establishments for medical use. The British spas are distinguished from those of the Continent by their invigorating and tonic quality, imparted by the northern island climate. The summer is considerably cooler than at most continental resorts, excepting only those in the Alps. With this temperate quality and the long northern days is combined a freshness and almost incessant movement of the air. The medical value of the northern moorlands of moderate altitude is comparable to that of the Swiss mountains. The influence of the British climate and of latitude profoundly modifies the action of water-drinking and baths, and the reaction of invalids under treatment in fresh and tonic airs is different from that observed in enclosed and sultry valleys. Two main types of spa treatment are practised in England:

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SPECIALISATION.

No one country contains every natural provision for health. There are no arsenical waters in England, and children and others for whom such waters are considered desirable must be directed elsewhere. Alkaline waters, which are greatly resorted to in other countries, are little used in England.

The British spas have not specialised to the same extent as those on the Continent. For instance, treatment by diuresis (flushing of the kidneys) has not been differentiated and systematised, although there are many available waters which have diuretic properties, such as those of MALVERN, ILKLEY, MATLOCK, BRACEBOROUGH SPA. There is no health resort that is mainly or exclusively concerned with cardiovascular cases with the various procedures recommended for these too prevalent conditions. Treatment in the home country is especially desirable for cases of that kind. Again, there is no spa chiefly devoted to asthma and respiratory affections, although useful methods are now employed at more than one of the British spas. In other countries a spa technique has been developed for these ailments, in which varied modes of treatment are combined—a system of inhalations being used simultaneously with waters and general and local baths.

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From the international standpoint, therefore, the s of Britain take their place as a group of northern tions. They offer a particular type of treatment, ich, reinforced by the island climate, is more mulant and less sedative than spa treatment on Continent. With this dominant character the ferent members of the group serve a good variety medical uses.

HUGHLINGS JACKSON MEMORIAL MEDAL.

PRESENTATION TO SIR CHARLES SHERRINGTON.

On May 19th, at the annual meeting of the Section Neurology of the Royal Society of Medicine, Stanley Barnes, as president of the section, had e pleasant duty of introducing the first recipient the Hughlings Jackson Memorial Medal. He alled the foundation and history of the lectureship, e first lecture being given in 1897 by Dr. Hughlings ckson himself to the old Neurological Society, d subsequent lectures being delivered at irregular tervals by such men as Hitzig, Broadbent, Horsley, wers, Head, and Dana. About twenty years ago oth had suggested raising a fund to endow the tureship, but no action was taken and the matter s forgotten. In 1931 Sir Charles Sherrington ve the lecture, and at a dinner given in his honour e same evening Mr. Leslie Paton, then president the section, proposed that money should be raised endow a medal and give an honorarium to the cturer. The proposal had an enthusiastic reception d a satisfactory outcome, and that evening they ere in a position to present the first medal and a eque for 100 guineas to Sir Charles Sherrington. r. Barnes noted that among those present was r James Crichton-Browne, Dr. Hughlings Jackson's ldest surviving friend, and called on him to say a w words. Sir James spoke of his first meeting with ackson 70 years ago, of their subsequent association, nd of the early papers published by Jackson in the edical Reports of the West Riding Asylum. When e (the speaker) had to leave Yorkshire, these reports nder his editorship ceased to be published, and he need for some similar journal led to the foundation f *Brain*, and out of *Brain* grew the Neurological ociety, of which Hughlings Jackson was the first resident. Sir James Crichton-Browne recalled ackson less as a great neurologist and physician han as a dear friend. Sir Charles Sherrington had done magnificent work on the lines laid down by Jackson, with advantages for research which Jackson did not possess.

Dr. T. Watts Eden, president of the society, then presented the medal and cheque to Sir Charles Sherrington, and also his diploma as an honorary member of the Section of Neurology. It was appropriate that the work of one of the greatest clinical observers the world had ever seen should be thus commemorated. Sir Charles Sherrington's investigations had disclosed a domain of nerve function which was hardly dreamed of in Hughlings Jackson's time, and the happy association of clinical and experimental work was exemplified on this occasion.

Sir Charles Sherrington, who was received with prolonged applause, expressed his gratitude to the society and to all those at home and abroad who had joined in the inauguration of the medal and had honoured him by this presentation. He spoke of Hughlings Jackson's happiness in being able to combine work in the laboratory with work at the bedside; he, himself, had found it impossible to get far outside the walls of the laboratory, and was all the more appreciative of the fact that they had singled out for this honour one who had been working on a narrow line. The presence of Sir James Crichton-Browne was an added pleasure, inasmuch as he had been a colleague and friend of Hughlings Jackson long years ago.

After Mr. Leslie Paton had presented two replicas in toned silver to Dr. Watts Eden for the Royal Society of Medicine, Dr. Stanley Barnes thanked the treasurer of the fund, Dr. Wilfred Harris, in the name of the Section of Neurology for his work for the fund.

Dr. Harris, in reply, said that when he went up to Cambridge as an undergraduate in 1888, Sir James Crichton-Browne had recently been elected president of the Neurological Society, third in succession from Hughlings Jackson. At Cambridge, under Michael Foster, he found that the third volume of Foster's Physiology on the Central Nervous System, a monumental work, was written entirely by Sherrington. As the students were supposed to know the whole of this for the tripos examinations, he thought of Sherrington in those days perhaps with somewhat mixed feelings. Five years later, after leaving Cambridge, he became Dr. Hughlings Jackson's house physician, and he had always looked on Jackson's and Sherrington's names as meaning more for him in neurology than any others. It would readily be understood, therefore, how intensely interesting it had been for him to aid in gilding the inscriptions of two names indelibly written in the annals of the Section of Neurology.

IMMUNISATION AGAINST DIPHTHERIA.

RESOLUTIONS OF THE LONDON CONFERENCE.

At a conference of 21 experts under the chairmanship of Dr. Th. Madsen, held in London in June, 1931, reports were presented of studies in immunisation against diphtheria carried out on a uniform plan in nine European countries. On the basis of the information submitted to it the conference formulated certain practical conclusions designed to help health administrations in the campaign against diphtheria. The text of these resolutions, which have received the approval of the Health Committee of the League of Nations, is given in the first number of the new *Quarterly Bulletin* as follows :—

1. Immunisation against diphtheria, when carried out under suitable conditions and with efficient prophylactics, effects a large reduction in the diphtheria mortality- and morbidity-rates among children thus treated. This is proved by studies carried out under strictly comparable conditions, such as those observed during the recent inquiries.

2. The reactions sometimes observed after the injection of diphtheria prophylactics give no cause for alarm and

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HUGHLINGS JACKSON MEMORIAL MEDAL.

PRESENTATION TO SIR CHARLES SHERRINGTON.

May 19th, at the annual meeting of the Section Neurology of the Royal Society of Medicine, Stanley Barnes, as president of the section, had pleasant duty of introducing the first recipient he Hughlings Jackson Memorial Medal. He lled the foundation and history of the lectureship, irst lecture being given in 1897 by Dr. Hughlings son himself to the old Neurological Society, subsequent lectures being delivered at irregular vals by such men as Hitzig, Broadbent, Horsley, ers, Head, and Dana. About twenty years ago h had suggested raising a fund to endow the ureship, but no action was taken and the matter forgotten. In 1931 Sir Charles Sherrington the lecture, and at a dinner given in his honour same evening Mr. Leslie Paton, then president e section, proposed that money should be raised ndow a medal and give an honorarium to the urer. The proposal had an enthusiastic reception a satisfactory outcome, and that evening they in a position to present the first medal and a ue for 100 guineas to Sir Charles Sherrington. Barnes noted that among those present was James Crichton-Browne, Dr. Hughlings Jackson's st surviving friend, and called on him to say a words. Sir James spoke of his first meeting with son 70 years ago, of their subsequent association, of the early papers published by Jackson in the ical Reports of the West Riding Asylum. When the speaker) had to leave Yorkshire, these reports er his editorship ceased to be published, and need for some similar journal led to the foundation *Brain*, and out of *Brain* grew the Neurological ety, of which Hughlings Jackson was the first ident. Sir James Crichton-Browne recalled kson less as a great neurologist and physician as a dear friend. Sir Charles Sherrington had e magnificent work on the lines laid down by son, with advantages for research which Jackson not possess.

r. T. Watts Eden, president of the society, then ented the medal and cheque to Sir Charles rrington, and also his diploma as an honorary nber of the Section of Neurology. It was appropriate t the work of one of the greatest clinical observers world had ever seen should be thus commemorated. Sir Charles Sherrington's investigations had disclosed a domain of nerve function which was hardly dreamed of in Hughlings Jackson's time, and the happy association of clinical and experimental work was exemplified on this occasion.

Sir Charles Sherrington, who was received with prolonged applause, expressed his gratitude to the society and to all those at home and abroad who had joined in the inauguration of the medal and had honoured him by this presentation. He spoke of Hughlings Jackson's happiness in being able to combine work in the laboratory with work at the bedside; he, himself, had found it impossible to get far outside the walls of the laboratory, and was all the more appreciative of the fact that they had singled out for this honour one who had been working on a narrow line. The presence of Sir James Crichton-Browne was an added pleasure, inasmuch as he had been a colleague and friend of Hughlings Jackson long years ago.

After Mr. Leslie Paton had presented two replicas in toned silver to Dr. Watts Eden for the Royal Society of Medicine, Dr. Stanley Barnes thanked the treasurer of the fund, Dr. Wilfred Harris, in the name of the Section of Neurology for his work for the fund.

Dr. Harris, in reply, said that when he went up to Cambridge as an undergraduate in 1888, Sir James Crichton-Browne had recently been elected president of the Neurological Society, third in succession from Hughlings Jackson. At Cambridge, under Michael Foster, he found that the third volume of Foster's Physiology on the Central Nervous System, a monumental work, was written entirely by Sherrington. As the students were supposed to know the whole of this for the tripos examinations, he thought of Sherrington in those days perhaps with somewhat mixed feelings. Five years later, after leaving Cambridge, he became Dr. Hughlings Jackson's house physician, and he had always looked on Jackson's and Sherrington's names as meaning more for him in neurology than any others. It would readily be understood, therefore, how intensely interesting it had been for him to aid in gilding the inscriptions of two names indelibly written in the annals of the Section of Neurology.

IMMUNISATION AGAINST DIPHTHERIA.

RESOLUTIONS OF THE LONDON CONFERENCE.

At a conference of 21 experts under the chairmanship of Dr. Th. Madsen, held in London in June, 1931, reports were presented of studies in immunisation against diphtheria carried out on a uniform plan in nine European countries. On the basis of the information submitted to it the conference formulated certain practical conclusions designed to help health administrations in the campaign against diphtheria. The text of these resolutions, which have received the approval of the Health Committee of the League of Nations, is given in the first number of the new *Quarterly Bulletin* as follows :—

1. Immunisation against diphtheria, when carried out under suitable conditions and with efficient prophylactics, effects a large reduction in the diphtheria mortality- and morbidity-rates among children thus treated. This is proved by studies carried out under *strictly* comparable conditions, such as those observed during the recent inquiries.

2. The reactions sometimes observed after the injection of diphtheria prophylactics give no cause for alarm and

should not interfere with the campaign for the immunisation of children, including tuberculous children, nor should they prevent the choice of the most active prophylactics.

3. The conclusion appears justified that, in spite of a few exceptional cases, the efficacy of immunisation may be deduced from the change of the Schick reaction from positive to negative.
4. Taking as a basis the figures concerning the morbidity, the percentage of Schick reaction rendered negative after the injection of the immunising agent, and a certain number of titrations of antitoxin in the blood of persons immunised, it may be concluded that formol toxoid (anatoxin) is the most efficient of those antigens which have been the subject of our comparative study—i.e., mixtures of toxin, antitoxin, and formol toxoid (anatoxin), and should be recommended for the present.
5. The clinical observations submitted to the conference indicate that, so far as can be determined up to the present, the immunising power of formol toxoid (anatoxin) in man appears to be in relation with the antigenic value of the prophylactic as measured by the flocculation method.
6. The method of administration recommended is by subcutaneous injection. When this is not possible, the prophylactic may be applied to the nasal mucous membrane. Our experience with the cutaneous method has not been favourable.
7. Immunisation should be carried out by means of three injections. *It is hoped that, in the future, the use of a more active prophylactic will make it possible to immunise with two or perhaps even one injection.*
8. The intervals recommended between injections are three weeks between the first and second injection, and at least two weeks between the second and third.
9. It is unnecessary to carry out the Schick reaction before immunisation. It is, however, desirable to use the Schick reaction before and after immunisation in a certain proportion of subjects in order to determine the value of the method employed.
10. It is recommended that immunisation against diphtheria should be carried out not later than during the pre-school period, after the end of the first year of life. If the children have not been immunised during the pre-school period, *they should be immunised, if possible, during the first year of school attendance.*
11. Charitable organisations and administrations receiving children in homes (holiday camps, preventoria,[1] sanatoria, &c.) are advised to require, from both children and staff, a diphtheria immunisation certificate on admission or a certificate attesting that the Schick reaction was negative.
12. Immunisation is recommended for medical, nursing, and domestic staff in hospitals, homes, dispensaries, sanatoria, schools, &c.
13. Immunisation is to be recommended even during epidemics in the case of children who have been in contact with patients, as there is so far no evidence on record as to the existence of a *negative phase.*
14. In the opinion of the experts, diphtheria immunisation should form the subject of active public education on the part of the health administrations of the different countries in order to bring home to everyone the advantages of this method of protection in safeguarding the public health.

These resolutions, it is stated in an introductory paragraph, being the logical outcome of lengthy investigations carried out concurrently in several countries, represent an international consensus of opinion, and constitute a doctrine which, in view of the qualifications of its authors, may be regarded *as established.*

MEDICINE AND THE LAW.

Highgate Hospital Inquiry.

ON April 21st the Central Public Health Committee (No. 1) of the London County Council had its attention drawn to an article in *John Bull* reflecting upon the admission and treatment of a patient in Highgate Hospital. The article contained complaints of the treatment of the patient at his reception, delay in the attendance of a hospital doctor, persecution of the patient with questions about his personal history, wrong diagnosis, acute suffering of the patient from thirst and want of nourishment, unsuitable diet, failure to notify the patient's wife of her husband's *serious condition,* and the fact that a letter was sent to him after his death. The article seems to have set these allegations forward as a grave indictment of the general administration of municipal hospitals.

The Committee appointed a subcommittee to examine the charges. The widow had previously called at the County Hall and made complaints; she then said she would attend the inquiry, but, although invited to do so, she did not in fact attend. The subcommittee made a thorough investigation of the allegations and expressed the opinion that the facts elicited afford no justification whatever for the reflections made in the published article on the organisation and administration of municipal hospitals. While space does not permit detailed analysis of the separate complaints and the relevant findings, the suggestion of wrong diagnosis may perhaps be cited as a sample.

The article said the patient was unquestionably suffering from acute pneumonia, and that the family doctor's order for his reception was signed to that effect with an added query as to the possibility of tuberculosis; that the hospital doctor ordered the patient, though certified to be suffering from pneumonia, to be taken to the tuberculosis ward; and that the widow protested and insisted on a post-mortem examination, whereupon the cause of death was certified to be pneumonia. The subcommittee find that the family doctor's certificate said the patient was suffering from broncho-pneumonia (tuberculous) and that there was no query. On this and his past history he was placed in the tuberculosis ward. His history was that he was certified suffering from tuberculosis of the lungs in 1927 and was then treated at Colindale Hospital, Hendon; he suffered from hæmoptysis in 1931 and was treated at St. Joseph's Hospice, Hackney; during 1928, 1929, 1930, and 1931 he was under the care of the tuberculosis officer at St. Pancras dispensary. The medical superintendent at Highgate described an interview with the widow at which she had said she thought his illness was probably not tuberculosis; she had had him insured lately and would not be able to get the money if tuberculosis appeared on the certificate. The post-mortem inquiry did not disclose tuberculosis as a cause of death. The primary cause of death was lobar pneumonia, the secondary cause was *cardiac syncope.* Part of the allegation as to unsuitable diet was that the patient was offered boiled mutton instead of jelly and custard. The subcommittee says that he was given lemon water, beef tea and milk, and a little custard and jelly; boiled mutton was not included in the hospital diet on any of the days in question.

The Committee is to be congratulated on its prompt and proper action and the hospital management on its complete vindication. If the truth receives the same publicity as the charges, perhaps no great harm will have been done.

Sale of Izal by Grocer: Unsuccessful Proceedings.

One of the points reported upon in *1930* by the Departmental Committee on the Poisons and Pharmacy Acts was the inclusion in Part II. of the present Schedule of Poisons of "carbolic acid and liquid preparations of carbolic acid and its homologues containing more than 3 per cent. of these substances." The Committee observed that the interests of public health demanded the use of effective disinfectants, but that the average purchaser for domestic and ıdred purposes, instead of going to a chemist's op and buying a really effective article which ecause it is a poison) he cannot get elsewhere, clines to buy from a grocer or general dealer an ferior article bearing perhaps the same or a similar me, not a "poison," but one which as a disinfectant inefficient in fact. This was a point which had been rongly urged on the Committee by the Society of edical Officers of Health. A wider issue, of course, the loss of the public safeguard which was broken wn when under the Act of 1908 the sale of poisons the public ceased to be solely in the hands of rsons qualified in skill and knowledge. It was a fect of the Committee's recommendations that ey would apparently have multiplied the unqualified llers of the raw material of murders and suicides by owing any person to be a licensed seller who was t positively of bad character or unsound mind.

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[1] i.e., institutions for delicate children.

The Pharmaceutical Society, to whose honourable cord of service the Committee paid tribute, does its st to enforce laws which are none too clear. It kes action (under Section 15 of the Pharmacy Act, 68) against anyone who, not being a duly registered armaceutical chemist, or chemist or druggist, sells poison to which the Acts apply. The Society thus ok proceedings lately against a Hounslow grocer selling the disinfectant Izal, a liquid preparation phenol and a homologue of carbolic acid. Such mologues are included in Part II. of the list of tutory poisons in the terms already quoted; but ere is an express exception in favour of "preparans for use as sheep wash or for any other purpose connexion with agriculture or horticulture, conined in a closed vessel distinctly labelled with the rd 'Poisonous,' the name and address of the ler, and a notice of the special purposes for which e preparations are intended." There was no doubt at Izal came within the description of carbolic acid mologues containing more than 3 per cent.; there s no doubt that, as sold, it was contained in a sed vessel properly labelled. The sole question the Hounslow case was whether it was a preparation use as sheep wash or for an agricultural or hortiltural purpose. There was evidence that the effield manufacturers packed Izal in bottles in a rton described as "Pharmacists' Pack" when the id was to be sold by chemists for domestic use; ey packed it in something called the "Universal ck" when it was to be sold by grocers for agriltural or horticultural purposes. In the latter case e label satisfied the statute by saying "for use in riculture and horticulture: for general purposes d to a pail of water two tablespoonfuls of Izal." e Brentford county court judge held that the eparation was duly sold with a notice that it was r use in agriculture or horticulture, and that specific stances of its use as such were given; consequently e preparation came within the statutory exception, d the Acts had not been broken. For the Pharmautical Society it was argued that the court must ok at the real object of the sale; if the sale was in ct for a purpose which was neither agricultural nor rticultural, the labelling ought not to protect the qualified seller. The King's Bench Division, wever, has rejected this argument and has refused look at the exact purpose for which the bottle as sold. If the label was a mere sham, there might an offence against the Acts; but there was no idence of any such fraud in the present case. The igh Court upheld the county court, and thus the harmaceutical Society, seeking to do its duty under e Acts, is foiled.

ANTIGEN-BASED TESTS IN THE DIAGNOSIS OF NEMATODE INFECTIONS.

EARLY last year we commented on work by N. Hamilton Fairley and F. Jasudasan[1] which brought out the value of complement fixation in the diagnosis of schistosomiasis in animal and man. In this infection the complement-fixation reaction to antigen is of the group type and the source of antigen advised by these writers was snail liver heavily infected with the cercaria of *Schistosoma spindalis*. A heavy infection is necessary so that the test material may contain as much cercaria and as little liver as possible. In this connexion it is worth noting that it is indeed possible, should necessity arise, to obtain cercariæ almost free from liver by grinding and washing this and collecting the live cercariæ which escape from it, that in this way an almost pure cercarial antigen can be obtained from a lightly infected liver, and that the precipitin reactions produced by it are reported as being stronger, clearer, and more specific than are those from whole liver.[2] The obtaining of an almost pure antigen from a worm in a stage of development in which it is embedded in the host's tissues was anticipated by Ströbel[3] in 1911 when he freed trichinæ from infected meat by digestion with pepsin and hydrochloric acid. Using this principle Bachman[4] was able to obtain the living larvæ of *Trichinella spiralis* so free from other matter that the fluid containing them gave no biuret reaction.

THREE TYPES OF TEST.

In nematode infections three of the antigen-based tests repay consideration—namely, precipitin, intradermal, and complement fixation.

Precipitin reactions were secured by Bachman in trichinosed animals, using the antigen obtained as just described; but precipitins did not appear in the serum of infected rabbits until about 30 days after infection, by which time, as he points out, human cases are either dead or convalescent. Nevertheless, in these particular experiments the antigen was specific in the sense that in course of time every infected animal showed precipitins if it lived long enough, while no control ever did so. In contrast with this positive reaction in the case of a nematode which passes much of its life in tissues are the findings of Coventry for ascaris[5] and Stumberg for hookworms[6]; they could detect no parallelism between infection with these intestinal parasites and precipitin reactions with extracts of the respective adult forms. At present it cannot be said that precipitin reactions interest the practising medical helminthologist.

Intradermal reactions both immediate and delayed, the latter long since associated with Casoni's name in hydatid infection, have application in certain nematode infections. For *Strongyloides stercoralis* Fülleborn[7] has applied by the scratch method an antigen obtained from the dried bodies of the filariform larvæ and has found an immediate reaction in the infected, whereas in the uninfected there is none unless their skin shows a general sensitiveness to foreign protein. From the clinical standpoint he finds an interesting parallel between the itching perianal swellings which occur in those infected by this parasite and the papule which follows the application of an infective larva to the skin; and he suggests that the former are due to penetration of the skin by larvæ which have developed to infectivity in microscopic portions of fæces sheltered in the depths of perianal folds, and that this supposition goes far towards explaining the persistent character of this infection. Examination of sections of the wall of the small intestine suggests that the habitat of the nemidia of this parasite is not limited to the lumen of the gut, but that it invades the lymph-bathed tissue of the mucosa itself. For parasites of the lumen of the gut (hookworm, ascaris, and trichuris) Coventry and Taliaferro [8] have found no relationship between such infections *and immediate intradermal reactions to antigens* made from the bodies of the respective parasites. Yet, for delayed reactions, Coventry [5] noted their occurrence in laboratory animals infected with or sensitised to ascaris, but not in controls; while the possibility of producing this reaction persisted for months, it did not run parallel to the precipitin reaction. That however it is not evidence of present, and probably not even of past, ascaris infection was indicated by Ransom, Harrison, and Cough,[9] whose experience led them to the conclusion that at least in laboratory workers it was an occupational condition, *capable of being produced in those whose occupation* brought them into contact with the parasite but who were not necessarily infected by it.

These findings suggest that antigen-based tests *for nematodes will mainly prove effective in those* infections in which the parasite lives in plasma or lymph, and there is evidence for this conclusion in work done during the last two years on the filaria group. Taliaferro and Hoffman [10] used as an antigen an extract in normal saline of dried and powdered *Dirofilaria immitis*, a filaria which lives in the heart cavities of the dog, and concerned themselves essentially with the immediate intradermal reaction after injection of the equivalent of 0·000125 g. of dried worm. This is a tenth of the amount of antigen, expressed as snail's liver, injected in the same strength as was used by Fairley and Williams [11] when they instituted *the intradermal method for the detection* of schistosome infection, the change apparently being made because the American workers considered that it appeared to be the concentration rather than the quantity of antigen which determined the severity of the reaction. This was held to be positive if the resulting wheal were 5 mm. in diameter or if one of any size possessed outrunners or pseudopodia, provided always that concomitant injections of snail's liver or of saline showed no such characters. As thus defined a positive result was obtained in 22 of 23 persons who at the time had micro-filariæ in their blood, and in two of 19 who had never been in an endemic area. They added, regarding delayed reactions, that these followed in five of the 23 who were certainly infected, in two of 39 who were possibly infected, and in none of 43 who were probably or certainly uninfected.

The matter has been carried a step further by Hamilton Fairley [12] who used both intradermal and *complement-fixation tests for infections with members* of the filaria group. By one of those not infrequent coincidences he, too, selected *D. immitis* to furnish his antigen, though his work was conceived and started in complete independence and without knowledge of that of Taliaferro and Hoffman. The antigen was a 2 per cent. alcoholic extract. In all of seven cases actively infected with loa, showing that is recent Calabar swellings and a high eosinophilia, complement fixation was positive in dilution of from 1 in 100 to 1 in 800. *It was also positive in* four persons believed to be infected with *F. bancrofti* —one, that is to say, had a clear history of filarial hydrocele and the three others had lived for many years in endemic areas. Negative reactions were obtained in 59 controls suffering from various diseases and parasitised with various other worms; they indeed included two cases of hydatid of the liver and two of infection with *Schistosoma hæmatobium* which gave strong reactions respectively with hydatid scolex and cercaria. Of these 59 cases three had evidence of old infection with *F. bancrofti* in that dead worms were excised from two of them, while the *third gave a history of lymphangitis* with microfilariæ in the blood a year earlier; but none of them showed microfilariæ at the time of examination. In addition one from whom an onchocerca nodule had been removed showed a weak positive reaction.

VALUE OF THE REACTIONS.

Apart from some carried through with negative results by Fairley and Glen Liston [13] in 1924 in guinea-worm infection, complement-fixation tests do not seem hitherto to have been applied to lymph-dwelling nematodes, but the positive findings now *reported in loa cases where living worms were certainly*, and in *F. bancrofti* cases where they were probably, present, taken in conjunction with the negative ones in which they were probably not present, must *lead to coördinated* serological and pathological study of a test which promises to be a valuable aid to diagnosis.

This conclusion is confirmed by the results of Hamilton Fairley's intradermal tests in which, at least latterly, the amount of antigen used was 0·00025 g. In all the seven loa cases there was an immediate reaction, as there was too in six of the seven cases known or suspected to harbour *F. bancrofti*. The exception had gastric carcinoma, positive complement fixation in a dilution of 1 in 800, a heavy eosinophilia, had lived for long in an endemic area, but had no detected evidences of filarial infection. *In these tests a positive reaction* was one in which the immediate wheal, including pseudopods, measured not less than 2·3 cm. and in which control injections were negative. Delayed reactions added themselves to the immediate ones in all the loa and in several of the *F. bancrofti* infections; and the resemblance of these deep blubbery swellings to Calabar swellings was a matter of comment by the loa patients who were thoroughly familiar with these latter in their own persons. In character they differ completely *from the initial wheal, but the delay* in their appearance need not be great; for instance in a case reported by A. C. Chandler, G. Milliken, and Schuhardt [14] Calabar swellings appeared within 20 minutes of an operation in which a loa was removed from the conjunctiva and was probably injured in the process, and in Fairley's cases this reaction sometimes appeared within an hour of intradermal injection. In the onchocerca case both immediate and delayed reactions were elicited. Fairley points out that the complement-fixation and intradermal tests supplement one another, since the first detects circulating antibody and affords an index to more active infection; while the latter detects the intracellular antibody which may persist long after circulating antibody and even the parasites themselves have disappeared, and does so whether the antigen remains limited to the dermis as in the immediate wheal, or diffuses into the subcutaneous tissue as in the delayed reaction. He points out too that since microfilariæ are not demonstrable for years after infection with *Loa loa* has taken place while Calabar swellings appear earlier, intradermal injection may allow of yet earlier detection, while it provides an entirely new mode of approach the study of infection with *F. bancrofti*. Taken in junction with the anatomical studies which are ng made by O'Connor,[15] the prospects of further l early additions to knowledge of filariasis seem re promising than has for long been the case.

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IRELAND.

(FROM OUR OWN CORRESPONDENT.)

E IRISH FREE STATE BUDGET AND MEDICAL SUPPLIES.

T is a fortnight since the Minister for Finance ned his Budget, and it is only now that the plications of several of the new customs duties unfolding themselves. For example, the real aning of the "package tax" was not grasped at st. It was known that a tax of 2*d*. was imposed every closed packet or bottle ready for sale which s imported to the country. It was not realised, wever, that the tax was to be levied on every gle packet or bottle in each parcel. Take the case a box containing, say, 12 ampoules of some drug t up ready for use. The tax on such an article ll be 2*s*.; that is to say, each ampoule has to ar a tax of 2*d*. This will be a serious matter, t only for the practitioner, but for the general spital. The use of ampoules has increased ormously in recent years, and will increase more in future as intravenous and hyperdermic methods of dication are developed. Even a small hospital ll find its drug bill much swollen by the duty now posed. The duty is all the more irritating as it es not tend to protect any Irish industry, and the sh trade is hardly considerable enough to induce y of the big manufacturing firms to establish cking-stations in the Irish Free State.

THE PROBLEM OF THE DUBLIN HOSPITALS.

Mr. John Good, an experienced hospital governor d a member of the Dáil, speaking recently at the nual meeting of the Adelaide Hospital, reverted the question of the amalgamation of the Dublin spitals. He recalled that some years ago a move-ent was set on foot to amalgamate the hospitals, project which would have made for efficiency and onomy. The scheme was dropped because the nsiderable sum required to finance it was not then ailable. Now large sums of money were available, it there did not seem to be the same interest in nalgamation as formerly. He hoped that the atter would again receive the attention of the rious hospitals.

The question is, indeed, urgent. The desirability amalgamation is not only obvious but admitted. he money is, or will be in another year or two, available. But there is every likelihood of its being spent in undertakings which will act as a direct obstacle to amalgamation. Every new wing built, every addition to or improvement made in existing buildings, will not merely spend the money which ought to be devoted to amalgamation, but will act as a deterrent. The hospitals are, in fact, "digging themselves in" in their present positions, and tending to give a new lease of life to a system which is outworn and should be obsolete.

THE ASSOCIATION OF PHYSICIANS.

The annual meeting of the Association of Physicians of Great Britain and Ireland was held in Dublin on May 13th and 14th. The Association had not met in Dublin since 1909. The president for the year is Prof. T. G. Moorhead, of Dublin. About one hundred members were present, and it is stated that the meeting was pleasantly successful on both the scientific and the social sides.

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

THE HOME OF THE COLLEGE OF SURGEONS.

AT the first annual general meeting of the Royal Australasian College of Surgeons held in Canberra, it was suggested that Canberra, being the home of the Commonwealth, should be the home of the College. The Government of the Commonwealth of Australia made a grant of land on condition that it should be accepted within a certain time by the College. It soon became evident that a headquarters at Canberra, although it might have had certain advantages, had many practical objections to it. The matter was further considered, and at the annual general meeting held in Sydney in 1931, it was unanimously agreed that the building of the College should be in Melbourne. This decision was a tribute to the fact that the lion's share of the work of establishing the College, maintaining it and bringing it up to its present high standard, had been done by Melbourne men.

By arrangement with the Government of Victoria, the College has now secured the site of the old Melbourne High School in Spring-street, Melbourne, for which a lease has been granted for a term of years at a nominal rental, on condition that a suitable building shall be erected on the site within a specified time. It is proposed to demolish the greater part of the present building, but retain the architectural features facing Albert-street, and to erect additions which will permit of accommodation for lecture rooms, library, laboratories, museum, and administrative offices. The area of the site is approximately two acres. A condition of the lease provides that, apart from the land required for the building of the College, the whole of the area shall be laid out in gardens, and be available to the public. It is understood that the erection of the building will shortly be undertaken.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

"ECONOMY."

THE bad financial situation of the Austrian exchequer has had unexpected repercussions on the conditions of the staff of the University of Vienna. At present, several important directorships of institutes and clinics are unfilled. These include the first clinic of medical pathology and materia medica, formerly held by Prof. Wenckebach. Leading physicians in Germany who have been offered this appointment have all refused, owing to the unsatisfactory salary and limitations on the conduct of private practice, and several Austrian physicians were approached. They too refused nomination, and the officials of the Ministry of Education, in whose hands the appointment rests, have resolved to save money by continuing the interim arrangement whereby the clinic is in charge of the late first assistant. The same sequence of events occurred in connexion with the first surgical clinic made vacant by the death of Prof. Eiselsberg. The man who would be his most natural successor, Prof. Clairmont, of Zürich, would not be welcomed by all parties to the appointment, and it is likely that in time some less prominent surgeon from one of our provincial clinics will be preferred. Meanwhile, the first assistant—a young surgeon—manages the clinic. Students are thus flocking to the second surgical clinic under Prof. Denk. His lecture theatre holds only 250 students, but 450 have entered their names to attend his lectures and try to squeeze into the crowded hall. The first clinic for diseases of women and obstetrics has remained vacant for quite a long time. Prof. Halban, an international authority, was nominated and nearly appointed. But antisemitic influences were strong enough to prevent his final appointment at the very last moment. Here again a young assistant manages the clinic at a considerable saving of expenditure. The institute for experimental pathology now in abeyance for several years will not be revived although there are several men fully qualified to be its director. The Central Röntgen Institute has become vacant through the death of Prof. Holzknecht. Instead of offering this appointment to a leading authority, who would organise a proper X ray school, and perhaps continue the world-wide attraction which this institute provided during Holzknecht's life, the officials are looking for a good "specialist" who will do the work for less remuneration and who will not be pensionable. Finally, the chairs of anatomy and normal histology are waiting for their occupants. The longer these posts remain vacant or are filled by men of little distinction, the more money is saved, but the students suffer, and, indeed, the prestige of the university. In medical circles this most unsatisfactory tendency is bitterly resented, and in a memorandum to the Government now in preparation, it will be pointed out that a really prominent teacher or clinician draws so many students and patients to Vienna that his higher salary is more than counterbalanced by the stream of money directed to the city by his work.

ASSASSINATION OF PROF. ALEXANDER.

Prof. Dr. Gustav Alexander, the world-famous otologist, was shot to death in front of his home by a former patient, undoubtedly a maniac. It appears that this famous surgeon had performed a cosmetic operation on the man 27 years ago. The patient had been suffering from depression of the bridge of the nose following syphilis, and desired to be freed from his disfigurement. He was not satisfied with the cosmetic effect of the operation, and as long as 22 years go he attempted to shoot Prof. Alexander. The attempt failed; the man was placed in a lunatic asylum and afterwards discharged. A few days ago he returned to Vienna with the intention of killing the surgeon and this time he succeeded. Prof. Alexander was only 57 years old. Already as a student he devoted his attention to the anatomy of the ear and the labyrinth, and he published at an early age several important papers dealing with the finer anatomy and histology of the inner ear and the cochlea. He became assistant to Pollitzer, then chief of the Otological Clinic of Vienna, and later succeeded Urbantschitsch as chief of the ear department in the Vienna Poliklinik. There he founded the Alexander School of Otology, a sort of Mecca for all surgeons studying otology in Vienna. His researches on the labyrinth of white (Japanese) mice, and of the echidna won him the gold medal of the French Otologic Society in 1904. He investigated also the problems of deaf-mutism, of heredity of pathological ear conditions, statics and equilibrium, and published standard works on various branches of his specialty. Cosmetic surgery of the ear and the auricle was only one of the branches in which he excelled. His death is a serious loss to the Faculty.

DEATH OF PROF. ERWIN LAZAR.

The well-known specialist on psychology of the pathologic child, Prof. Dr. Erwin Lazar, has died after a short illness in his fifty-fifth year. He was the originator of modern methods of dealing with the mentally defective or delinquent child, and was the first to emphasise the influence of environment and education on behaviour, and to show how such children could be made useful members of society. In the Pirquet Clinic for Children he organised a special department for refractory children, and later he took over the supervision of all such departments in Austria in the capacity of consultant. Dr. Lazar's classes on "Heilpaedagogik" (curative education) have become famous, and pupils from all parts of the world have been attending his clinic to learn his system of classification of the mentally or emotionally diseased child.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDE DEC. 14TH, 1932.

Notifications.—The following cases of infectiou disease were notified during the week:—Small-pox 76 (last week 68); scarlet fever, 1558; diphtheria 691; enteric fever, 36; acute pneumonia (primary o influenzal), 954; puerperal fever, 60; puerpera pyrexia, 115; cerebro-spinal fever, 49; acute polio myelitis, 5; encephalitis lethargica, 13; continue fever, 2; dysentery, 13; ophthalmia neonatorum 101. No case of cholera, plague, or typhus feve was notified during the week.

The number of cases in the Infectious Hospitals of th London County Council on May 17th–18th was as follows Small-pox, 116 under treatment, 4 under observation (las week 109 and 6 respectively); scarlet fever, 1559; diph theria, 1315; enteric fever, 6; measles, 2614; whooping cough, 420; puerperal fever. 15 (plus 5 babies); encephaliti lethargica, 228; poliomyelitis, 3; "other diseases," 8 At St. Margaret's Hospital there were 13 babies (plus mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including Londo there was no death from small-pox or enteric feve 81 (33) from measles, 4 (0) from scarlet fever, 43 (1 from whooping-cough, 31 (4) from diphtheria, 52 (1 from diarrhœa and enteritis under two years, an 43 (5) from influenza. The figures in parentheses ar those for London itself.

Liverpool reported 11 deaths from measles, Leeds Sheffield 3. Six fatal cases of whooping-cough were reporte from Liverpool and 3 from Nottingham. Diphtheri accounted for 5 deaths at Manchester, 4 at Liverpool an 3 at Hull.

The number of stillbirths notified during the wee was 336 (corresponding to a rate of 46 per 100 total births), including 55 in London.

GENERAL MEDICAL COUNCIL.

PRESIDENT'S ADDRESS.

N opening the 135th session on May 24th, Sir RMAN WALKER, the President, spoke with regret the retirement from the Council of Sir Ashley ckintosh, Sir Holburt Waring, and Sir Hilton ung. He welcomed Sir John Marnoch, Mr. K. Steward, and Mr. Douglas Hacking, M.P., o were taking their places, and he congratulated Henry Dale upon the knighthood conferred on ı since the last meeting.

OLD PROBLEMS AND NEW.

Examination of minutes and presidential addresses wed, said Sir Norman, that "not a few of the blems with which our predecessors wrestled 50 rs ago are remarkably like those with which are confronted to-day." In 1887, after the passing the 1886 Act, Sir Henry Acland had said :—

> Vhen the Council originally met in 1858 there was a eral feeling that the first thing to be considered was mode of improving the general education of the student.

'We cannot to-day speak of that sentiment in past tense," said Sir Norman, "when in the very r future we shall be again considering the education the student before he officially begins the study medicine. Again, here is what Sir Henry said in 7 about preventive medicine :—

> new significance attaches now to the old words "salus uli, suprema lex." Any system of medicine which uld ignore duty to the masses as well as to the individual iow no medicine at all; yet most here can remember time when "polypharmacy" practised sometimes in plicity, often for the sake of lucre, was not uncommon. ne of us can recall the day when the prevention of disease considered almost outside the province of an orthodox lical man.

ınd another of our problems this week is the ısideration of the question whether we are doing all can and ought in the teaching of that subject. it must always be. Circumstances change, and we do not adapt medical education to the changes dical education and the public will suffer."

RECIPROCAL RELATIONS.

"In July of last year the Privy Council transmitted the observations of the Council a copy of the text a Bill to modify the law concerning medical study d practice in France. The observations of the ecutive Committee were to the effect that it was eady far easier for a Frenchman to become a alified practitioner in this country than it was for a eigner to attain similar rights in France. But present tendency of every country to raise its undary walls and to narrow the gates in them has evailed, and the Bill has passed the Chamber, is w before the Senate, and is likely to become an t. Those now practising in France are exempted om its provisions, but those who in future desire to actise in France will be required to pass the baccaureats in, among other subjects, Latin and Greek, the subjects in the medical curriculum, and to come naturalised French citizens.

"The difficulties which arose over the very large mbers of American citizens seeking entry to the dical schools of this country have, thanks to the operation of responsible authorities in the United ates, almost disappeared."

INDIA.

"I wish I had better news to give about medical ogress in India. When a political situation is disturbed, plain useful things like Medicine are apt to be pushed on one side. I had hoped that a peaceful settlement of the question of Indian medical standards and qualifications would have been reached before other trouble arose, and often, in the light of my Indian experience, think wistfully of how nearly that was achieved. The Draft Bill to establish a Medical Council for British India was, at the instance of the India Office, considered in November last by the Executive Committee, who passed the following resolution :—

> The Executive Committee have considered the Draft Bill and the accompanying communications from the India Office, and recognise with satisfaction that it represents a well-directed effort to establish by statute a body which by its constitution and functions is designed to maintain a satisfactory minimum standard of medical qualification for admission to the proposed Indian Register. The Executive Committee are of opinion that, if carried into law, the Bill will conduce to the improvement of Indian medical education, and serve the best interests, both internal and external, of Indian medicine in general.

"Pressure of other business prevented the Government from finding time for the discussion of the Bill at the Delhi Session of the Legislative Assembly, now closed. It is only fair to recall that in most countries it takes time to get a medical Act through Parliament. It took about 50 years of discussion and negotiation to secure the passing of our Act of 1858."

EXAMINATIONS AND REPORTS.

"The present cycle of inspection of the final examinations in medicine, surgery, and midwifery, under the 1886 Act will be completed in June. It will have occupied a little over two years . . . It will be the Council's duty to consider whether in the light of the reports any modification in the curriculum and examinations should be recommended to the licensing bodies. In November, 1920, in connexion with the last cycle of inspection, the Council authorised the Education Committee to set up, under the auspices of the three branch councils, subcommittees to report on the four sections of the medical curriculum. On these subcommittees there sat as coöpted members experts on the different subjects concerned, and useful reports were submitted by all. This method had the merit of enlisting the interest of the medical schools and licensing bodies in the proposals made, and much useful constructive criticism was forthcoming."

"The Education and Examination Committees will jointly present reports on two matters of urgent public importance (maternal mortality and the methods of teaching preventive medicine) which have been under consideration for some time."

"The British Pharmacopœia 1932 is approaching completion, and is expected to be ready for official publication on Sept. 30th."

"The Executive Committee received at their meeting in February a communication from the Medical Research Council concerning patent law. The attitude of the medical profession in this country has always been averse to the patenting of any remedy which might be directly useful to the public, and the patenting of insulin, in the public interest, by the University of Toronto has been generally approved because it was felt that the control of that remedy was essential, and that it was in safe hands. Now, however, a new question has arisen in respect of the patenting of processes used in medical research, and this it is represented is hindering the advance of medicine. This is obviously not in the public interest, and the members of this Council as well as nearly all the members of the profession of this country will, there is no doubt, be in wholehearted sympathy with the proposals which the Medical Research Council has made for solving the difficulty which has arisen.

"Nearly all my predecessors have commented on the responsibilities which rest on the shoulders of the President during the intervals between the sessions. There seems to be an unending stream of problems to settle. I think what has distressed me most is the number of complaints about irregular certificates. I do not propose to discuss the subject to-day. I will just say this: If every practitioner would read carefully the precise terms of every document to which he is asked to put his signature, there would be fewer complaints."

PANEL AND CONTRACT PRACTICE

Varicose Veins.

The sclerosing treatment of varicose veins has given rise to much talk among insurance committees and panel committees, and in the Ministry of Health. Practitioners, in the first instance, went to some trouble to learn the technique and its pitfalls. They used it in all suitable cases, whether private or panel, and the question arose whether this treatment came within the scope of ordinary panel practice. Certain practitioners claimed a fee and forwarded the appropriate form (GP 45) to their insurance committee. Under the regulations the committee has to seek the advice of the local medical committee—which usually has the same personnel as the local panel committee—on these forms. Generally speaking, local medical committees were agreed that the injection treatment was a new responsibility requiring experience, and such that a medical man of ordinary skill and standing, who trained quite efficiently possibly some years ago, could not reasonably be expected to undertake; therefore those who do undertake it, having proved their ability to do so, should be allowed a fee for their services. Insurance committees usually accept the views of the local medical committees, but here a difference of opinion arose. It was said: "This is a very simple operation. House surgeons at the hospitals, and even dressers, are doing it daily, and why therefore should the panel practitioner charge a fee for this triviality?" While it is quite true that house surgeons perform this simple operation, the responsibility is the hospital's for which he is working; moreover, he is working under instructions of a senior surgeon, and it is thought to be entirely another matter to expect the practitioner to undertake this work on his own responsibility when he may not have had the opportunity of even seeing it done.

When local medical committees and insurance committees differ, an appeal goes to the Ministry of Health, which thereupon appoints referees—a barrister and two practitioners. A decision was given by referees in a Manchester case in 1929, when it was held that this treatment is within the range of service. The matter came before the Insurance Acts Committee, and it was decided not to recognise the Manchester decision as case law, but as affecting that case only. Since that time patients have been charged for treatment regularly. Forms GP 45 have been filled in and forwarded to insurance committees, some of whom have passed them as outside the scope, while others—notably those of London, Leicester, and Kent—have refused to agree with their local medical committees. No further referees were appointed to hear these cases, and for over two years the cases accumulated. The Ministry then asked the local medical committees to accept as binding the decision of referees they would appoint to try a few simple non-complicated cases. Kent and Leicester agreed to this course, and after the hearing the decision was again that the treatment comes within the scope of the Act. With the decision came the suggestion that all old cases outstanding for decision should be treated as outside the scope, but that after the date of the decision new cases were to be inside the scope. The London local medical committee, however, would not agree to this; they are against the principle of case law, holding that each case should be dealt with on its merits, and they still pass on each GP 45 form for varicose vein injections to the insurance committee as a case outside the range of service.

The Ministry have now issued a report, dated April 26th, by the same referees who reported on Leicester and Kent in July, 1931, on some 12 cases in the London area; and, as was to be expected, they find all the cases come within the scope of the Act. They quote as confirming the correctness of this view that the Manchester referees in 1929 and those in Scotland and Northern Ireland have reached similar conclusions.

If the Insurance Acts Committee decide to accept this report as binding case law it will mean that further duties are imposed upon the panel practitioner, and this will have to be borne in mind when the next capitation fee is considered. The aim of the authorities has always been to expect panel practitioners to give the same standard of treatment to panel and private patients of the same class. Private patients willingly pay special fees for this sort of work, and the effect of this decision will probably be that many practitioners will advise their panel patients to go to hospital for this treatment—as they would if they were allowed to charge but the patient could not afford the fee. Thus it seems likely to discourage individual enterprise and increase hospital congestion.

Practitioner and King's College Hospital Scheme

The mutual benefit association, now being promoted by King's College Hospital, is somewhat similar to the British Provident Association, but not part of it. Practitioners living in the area of London served by this hospital are disturbed by the particulars of its rules and by the way the scheme has been advertised. Hospitals were, it is felt, not intended to enter into direct competition with practitioners. They were started for the treatment gratuitously of patients unable to pay their own medical man but have gradually encroached on the practitioners domain amongst artisans and better-class working people, the work however of the consultant surgeon or physician remaining gratuitous. In the new scheme this consultant class appears to gain financially at the expense of the practitioners. No income limit is placed on membership. A patient with (say) £1500 a year, and suffering from some simple medical or surgical ailment, will be able to say in effect: I will have 21 days in King's and be treated at reduced fees by a member of the staff, because I pay £1 1s. a year to that hospital. His own doctor cannot prevent him and might not even be asked about it.

A deputation of local medical men, after interviewing recently some of the committee of management cured an addition to the rules to run as follows: "10. ubscribers are normally admitted by arrangement ith the subscriber's usual medical adviser," and a ractitioner is also to be placed on the committee f management as consultative member. "The heme is however still regarded as unsatisfactory," correspondent writes, "and as the scheme is dvertised and the consultant staff benefit financially hrough its advertisement, the matter may come nder the jurisdiction of the General Medical Council. his point will, of course, be considered by those members of the staff who propose to work for reduced ees for any subscriber to the scheme, no matter hat income he may have. If not vetoed in this way ractitioners might decide to cross off their lists of pecialist consultants those members of the staff who propose to work the scheme, and who, by so doing, are in effect becoming glorified general practitioners nder the aegis of the Mutual Benefit Association. There is another point. If the scheme became really popular the hospital would be unable to provide beds for subscribers in sufficient numbers when required, and unlike the insurance service there would be no Government regulations to see that the hospital authority carried out its obligations."

Panel Committee Matters.—Psychotherapy.

At a meeting of the Panel Committee for London on Tuesday last, Dr. Cardale reported that the Insurance Acts Committee, amongst other important business, had been considering the question of anæsthetic service under the Act. London had suggested that anæsthetics should be treated as general service, not subject to special fees, and that, until this was agreed to, the local distribution scheme should be amended to 1s. for each anæsthetic. Proposals from some areas were that partners and assistants should not be recognised for special anæsthetic fees and in others it was suggested that no fees should be paid in cottage hospitals with an open staff. It was eventually decided by rather a narrow majority that special fees for anæsthetics should be abolished. The matter will have to come before the next panel conference for confirmation.

The audited accounts for the year ended 31st Dec., 1931, showed costs of just over £4300 for the year, an increase of some £800 on 1930, mainly due to the appointment of an organising and assistant medical secretary. "We are of opinion," the auditors state, "that the expenditure involved is amply justified in view of the closer relationship which has been established between the committee and its constituents through the activities of this member of the staff."

The pharmacy subcommittee heard an appeal by a practitioner under Article 4 (1) of the medical benefit regulations against the decision of the insurance committee that 11 prescriptions for soap (one tablet) do not form part of medical benefit. It appeared that castile soap was required for enemata after an operation for colostomy. The committee, while deprecating the indefinite method of prescribing, came to the conclusion that in this case, by reason of the fact that soap had a definite therapeutic value when administered as an enema, it did form part of medical benefit.

There was some discussion about the fees charged by certain specialists (£36 15s.) for giving evidence on the subject of varicose vein injections before the Ministry referees. It was decided to pay these fees without comment, but the question of cost in such cases for the future was referred to a subcommittee, who will report on what is thought to be the proper procedure.

Considerable time was taken in considering a claim under the special form G.P. 45 for permission to charge an insured person for treatment by psychotherapy for (1) violent pains in the throat (2) anxiety neurosis. Several members of the committee deprecated these claims by a general practitioner, although in this case he satisfied the regulations as to his ability to perform this service. It would, they thought, open the door to grave abuse. Most general practitioners of any standing or capability treated their panel cases by suggestion as well as by other activities without charge, and if these cases were passed for payment as being outside the scope of the Act—they were the first that had ever been applied for in London—every patient who imagined he had some neurotic condition ("such as feeling faint at the thought of work") would be treated by his panel doctor, after attending a few lectures at some clinic, by psythotherapy. On the other side it was pointed out that psychotherapy was a highly skilled modern form of treatment and that the committee should not put obstacles in the way of progress. If this item was not passed for payment, as its opponents wished, it was part of the general practitioner service: but the opposition had said it was humbug and they could not have it both ways. Eventually by a fairly large majority these services were passed as being outside the scope of the Act.

Out-patients.

A committee of King Edward's Hospital Fund for London is considering the position of out-patients at the London hospitals. It was reported to the London Panel Committee, at its meeting in April, that the impression gained by a member who had met this investigating committee was that it was thought that hospitals were doing too much work for panel practitioners in out-patient departments. The main suggestion of this investigating committee as to why so many insured patients attend an out-patient department is:—

1. The treatment given by insurance doctors may not be successful.
2. The patient has a difficulty in changing his doctor whom he may dislike.
3. His doctor may not be available when wanted.
4. His doctor is often so busy that he cannot attend his patients.

The London Panel Committee, after considering the points raised, decided to set up a section to go into the whole matter, and to ask the investigating committee to receive a deputation which would be able to rebut statements derogatory to the panel service. This section has not yet reported. There may be practitioners who delight to send a case to hospital, but they are in a minority. Most insurance practitioners wish to obtain a second opinion on some difficult point when they send a case to the out-patient department; their trouble is that the hospitals are then apt to keep the case, supply the medicine they think fit, and tell the patient to come up in fourteen days time, with the result that the insurance practitioner loses sight and interest. It is admitted, of course, that some treatments and investigations can only be done by or in a hospital, but when that is carried out and finished, the case should be returned with a report to the practitioner sending it up in the first instance. Clerical work is a practical difficulty in this scheme, for it is quite hard enough work to take an afternoon at out-patients without having to write letters on each at the end of it; but it is felt that this difficulty could be overcome by suitable organisation, with benefit to surgeon or physician, out-patient department, insurance doctor, and last but not least to the patient himself.

CORRESPONDENCE

A CONFERENCE ON RADIUM.

To the Editor of THE LANCET.

SIR,—As a member of the conference held on March 4th, at the College of Physicians to consider the question of the radium bomb, I feel that certain passages in the report of that conference which was sent to you and appears in your present issue are likely to lead to misunderstanding.

In a memorandum placed before the conference it was suggested that we, as a country, are far behind the continent both in the equipment of our institutions and in the skill of our personnel. I was fortunately able from my first-hand knowledge of the work which is being done both in this country and abroad to show that this was not the case, and I understood that I had succeeded in convincing the other members of the conference. In the necessarily brief report of the conference this does not, however, appear.

We were, however, all agreed that workers in this field have not so far been able to obtain the facilities accorded in continental countries, where the resources of the State are more directly available for the service of medicine. It will be generally agreed that a fully equipped radium institute, on a really adequate scale, in the centre of London, and supported by the laboratories, physical and pathological, and the X ray equipment which are common practice on the continent, would be of great value and would enable us to coördinate and to show to better advantage the admirable work which is already being done by individuals. I am, Sir, yours faithfully,

Harley-street, W., May 21st, 1932. H. S. SOUTTAR.

REDUCTION OF BENEFITS OF INSURED WOMEN.

To the Editor of THE LANCET.

SIR,—I was surprised that Dr. Mabel Ramsay should approach the question of the sickness of insured women from the point of view that the present insurance scheme must be accepted as it stands, and without considering whether some reorganisation of the scheme is possible so as to go further in the direction of pooling the resources for the benefit of all.

State insurance involves pooling resources for the benefit of all, and therefore any legislation which reduces the benefits payable to one section of the insured population because of the high level of claims arising from that section is contrary to its basic principle. This principle has been applied in national unemployment insurance in the interests of men, where a considerable proportion of the sums paid in by and on behalf of women are used to subsidise the men's benefits. Women have always had a lower percentage of unemployment than men. For example, in 1922, 14 per cent. of the male insured population were drawing benefit and only 7 per cent. of the women. In January, 1932, 25 per cent. of the men were drawing benefit and only 15 per cent. of the women. At no stage in the intervening ten years did the claims of the women reach the level of the claims of the men. No suggestion has been put forward at any stage that the benefits payable to men under the Unemployment Insurance Acts should be related to the percentage of claims received. It would be most unjust that this principle of pooling resources should be applied when it is in the interests of men but that it should not be applied when it is to be in the interests of women.

Assuming for the moment that it is reasonable to depart from this principle, I cannot accept the suggestion that it is women alone who should be the victims. Women are not the only section of the insured population who constitute a special burden on the funds. The miners, who are a large proportion of the male insured population, have even higher sickness and disablement claims, as the following figures, taken from the report of the Government Actuary on the third valuation of approved societies (pp. 29 and 30), show:—

General Level of Claims.

	Men.	Women.	Miners.
Sickness	92%	104%	138%
Disablement	*90%*	*138%*	*151%*

Welsh insured persons, as a whole, also are a heavy charge on the fund. *I am not suggesting that the* benefits of miners or Welshmen should be reduced. The cases are cited to illustrate the point that women are not the only expensive section of the population and to strengthen the contention that differentiation is contrary to the principle of State insurance. Women should not be penalised any more than miners or Welshmen.

The report of the Government Actuary declares that the predominant feature of the third valuation is "the magnitude of the aggregate surplus and the substantial additional benefits enuring to a large proportion of the population." £20,000,000 has been released for the payment of additional benefits, and this is to be shared among 88 per cent. of the men insured and 38 per cent. of the insured women. That is to say, the scheme on its present contributions is going to pay additional benefits to a large majority of the insured population. Since this is so, there ought to be some readjustment of the distribution of the sum available, in order to prevent the reduction of the present statutory benefits payable to insured women. It is most inappropriate to suggest where the scheme has such surpluses that the women are to be victimised.

The majority report of the Royal Commission on National Health Insurance recommended a partial pooling of future surpluses in the following words (p. 120):

> "These considerations . . . would incline us to view with favour the introduction of a measure of partial equalisation of benefits so limited in its operation as to preserve the incentives to sound and economical administration . . . but at the same time going considerably beyond the restricted scheme of pooling which was introduced, so far as the societies actually in deficiency are concerned, by the establishment of the central fund."

Besides, there is nothing to prevent the extension of the machinery of the central fund which exists to help societies which have deficiencies. An increased levy on every insured person for the benefit of this fund, with any necessary additional powers to those who administer it, might afford a possible method of dealing with the difficulty. Once the principle is accepted, as I submit it ought to be, that the pooling of risks should be a pooling which does not exclude insured women, it is not beyond the power of the Government Actuary to devise a method of giving effect to the above suggestions, or otherwise to reorganise the finances of the scheme without sacrificing the women contributors.

It has to be remembered that already existing gislation is such as to contribute to the specially igh rates of sickness among women. Poverty is erhaps the greatest cause of sickness, and the overty of women is encouraged by their low wages. hen low wages are encouraged by the trade boards hich fix by law minimum rates of wages for women enerally a little more than half those fixed for men. hen low wages are also encouraged by the practice f the Government and by many local authorities f depriving women of their work when they marry. The lower sickness and unemployment benefits ayable to women are a further cause of her greater ickness. When the sickness of women is encouraged n so many ways by present legislation, it is surely most unjust that proposals should be adopted thus urther depressing the health of women.

I am, Sir, yours faithfully,

Harley-street, W., May 24th, 1932. JANE WALKER.

NEMBUTAL AND CHLORAL IN CHILDBIRTH.

To the Editor of THE LANCET.

SIR,—We are writing to confirm the good results obtained by the use of nembutal and chloral in childbirth by Drs. O'Sullivan and Craner, as reported in their excellent paper published in THE LANCET of Jan. 16th. We are in agreement with their conclusions, and think that owing to the infrequency of troublesome restlessness when these drugs are used as compared with Van Hoosen's intensive hyoscine treatment[1] [2] or Brammer's pernocton method[3] it is the most reliable means for obtaining complete amnesia in labour at present available to the practitioner who cannot spend many hours continuously with his patient. The other two methods mentioned more constantly produce a perfect twilight sleep, but need much more careful watching.

The following is a brief record of the first 59 cases treated by us at the Leeds Maternity Hospital. We are indebted to the three senior members of the honorary staff for allowing us to use the method on their patients.

Complete amnesia. 23 cases (39 per cent.).

	interval between start of treatment and birth
Shortest	45 mins.
Longest	9¼ hours.
Average	3 hours 21 mins.

Terminal chloroform was given, for about 10 minutes as a rule, in 19 of these cases.

Fair results. 22 cases (37 per cent.).

	interval between start of treatment and birth
Shortest	25 mins.
Longest	15 hours.
Average	4¾ „

These patients had partial amnesia but remembered birth or induction of anæsthesia. The average interval between starting treatment and birth is high because four of the cases lasted over eight hours: in each of these four cases one or more of the repeat doses was not given at the right time or was omitted. Terminal chloroform was given in 14 of these cases.

Poor results. 14 cases (24 per cent.).

	interval between start of treatment and birth
Shortest	30 mins.
Longest	3¾ hours.
Average	1 hour 56 mins.

These patients obtained little or no relief. Terminal chloroform was given in 10 of the cases.

Our results have improved, no doubt as a result of practice, and are likely to improve further. Eight of the last 13 patients in this series had complete amnesia—i.e., 62 per cent. as compared with 39 per cent. in the whole series. Three main causes of the unsatisfactory results in the fair and poor cases stand out:—

(1) In five cases treatment was started within 45 minutes of delivery. We think that this is about the minimum time for the development of amnesia.

(2) In nine cases the first repeat dose or a subsequent one was omitted. It is difficult to impress on nurses the importance of giving repeat doses when due, even when birth appears to be imminent.

(3) In 12 cases the terminal chloroform was omitted. We feel that the general anæsthetic is of great help in securing a perfect result, especially in the shorter cases.

It is important not to start treatment until pains are regular and strong. Gauss's rule of waiting till pains recur every five minutes and last 20 seconds is sound.

All the babies were born in good condition. The forceps was only used in one case (there were 43 primiparæ). The method of giving chloral in sweet lemonade advised by O'Sullivan and Craner is very satisfactory. Only three patients vomited after it. Fifteen of the patients had somewhat excessive loss, and received injections of ergot and pituitary extract. Only one patient gave rise to any anxiety, and she recovered after receiving intravenous gum saline. The rule in the hospital is that sisters give ergot and pituitary extract at their discretion: it is certainly given unnecessarily on occasion: the house surgeon is only called if the patient's general condition is affected.

It is to be hoped that this method will be given an extended trial in general practice. It is, as its authors claim, safe and easily carried out, and they deserve congratulation for having evolved it and brought it to the notice of the profession.

We are, Sir, yours faithfully,

ANDREW M. CLAYE,
Leeds, May 21st, 1932. DAVID W. CURRIE.

A NEW PITUITARY SYNDROME.

To the Editor of THE LANCET.

SIR,—I have read with interest your leading article (p. 1102) under this heading. The cases seem to coincide with those described in 1921 by Achard and Thiers under the title of the Diabetes of Bearded Women (*Bull. Acad. Med.*, lxxvi., p. 53), and of which I have reported instances in *American Medicine* for 1928 and in the *St. Bartholomew's Hospital Reports* for 1930 (lxiii., p. 53). But the condition also occurs in young men, though it is less likely to be recognised as the overgrowth of hair is not so abnormal. In one of my male cases the overgrowth of the adrenal cortex was clearly seen at operation, and also in one of the female cases. But I should agree that the basophilic adenoma in the pituitary is the primary lesion. I believe that Dr. Parkes Weber's case was the first in which the basophilic character of the adenoma was described.

I am, Sir, yours faithfully,

W. LANGDON BROWN.

Cavendish-square, W., May 20th, 1932.

To the Editor of THE LANCET.

SIR,—Your leading article last week prompts us to point out that, purely on the syndrome which Cushing has elaborated from an analysis of the 12 cases which he collected from the literature since 1912, we have been enabled to recognise another example of this disorder.

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[1] Jennings, D. R.: Brit. Med. Jour., 1929, ii., 801.

[2] Claye, A. M.: Ibid., 1931, ii., 12.

[3] Brammer, H.: Schmerz, Narkose, Anæsthesie, 1931, iii., 399.

The patient, whose clinical history we have discussed in detail in a paper to be published in the forthcoming issue of the *Guy's Hospital Reports*, died in February, 1931, without a diagnosis having been made either during life or as the result of the autopsy. On reading Cushing's paper (*Bulletin*, Johns Hopkins Hospital, March, 1932), our attention was recalled to this case, and we were fortunate enough, owing to the kindness of Prof. R. Donaldson, to gain access to the autopsy material. On cutting sections of the pituitary we found a basophil adenoma, about the size of a pin's head, lying in the front of the anterior lobe. This tumour was too small to deform the pituitary or to produce pressure symptoms or X ray evidence of pituitary enlargement.

In all essential details this case so exactly corresponds with the symptom-complex described by Cushing, that we have entitled our account of it, which is now in the press, "A Case of Cushing's Syndrome." Dr. Parkes Weber, who originally recorded one of the 12 cases referred to by Cushing has also suggested, in the last issue of the *British Medical Journal*, that "Cushing's syndrome" would be a convenient label for the disorder.

We are particularly interested in your comment on the apparently contradictory symptoms of sexual hypo-function in connexion with this disorder. To the basophil granular cell the function of secretion of the sex-maturing hormone, the Prolan A and B of Zondek, has been ascribed. On the analogy of acromegaly as a manifestation of an adenoma of the acidophil cells, one might expect increased activity of the sexual organs to be a prominent feature of the basophilic adenoma. Investigations of various pituitary rumours have been made by one of us. On the principle of the Aschheim-Zondek reaction for pregnancy, urine obtained from cases of pituitary disease has been injected into test animals, and luteinisation of the ovary has been caused by the urine of every case of acromegaly examined by this method. No such reaction has been obtained with urine from patients with other pituitary disorders, which include cases of Fröhlich's syndrome as well as pituitary tumours producing mainly pressure effects. Only one case of pituitary basophilism has been examined in this way, a case under the care of Cushing himself, and it gave a negative Aschheim-Zondek reaction. Sexual disturbances are prominent in acromegaly, and increased sexual activity is frequently one of the first symptoms, though later impotence and amenorrhœa are the rule.

These findings are suggestive of the connexion of the acidophil rather than the basophil cell with the regulation of the sexual rhythm, and to some extent, serve to indicate the value of the further recognition and investigation of Cushing's syndrome as a possible means of determining the function of the basophil cells of the anterior lobe of the pituitary.

We are, Sir, yours faithfully,
P. M. F. BISHOP,
H. G. CLOSE.

Guy's Hospital, S.E., May 23rd, 1932.

NIETZSCHE'S PHILOSOPHY.

To the Editor of THE LANCET.

SIR,—I beg to thank you for your kind comment upon my new pocket edition of Nietzsche's "Thus Spake Zarathustra" (Allen and Unwin), and I hope, with your reviewer, that "it may find many readers in the medical profession." Nietzsche indeed relied for his recognition upon our profession and its sober art, for he had an inkling that his own confrère would look askance for a long time still upon a thinker who, instead of an imaginary "soul," again drew men's attention back to their bodies. "Thus Spake Zarathustra" contains a special chapter against those "uplifting" philosophers who wish to lead mankind into celestial heights and away from this earth and their bodies. It bears the title "The Despisers of the Body," and it begins as follows: "To the despisers of the body will I speak my word. I wish them neither to learn afresh, nor teach anew, but only to bid farewell to their own bodies—and thus be dumb."

I am, Sir, yours faithfully,
OSCAR LEVY, M.D. (Freiburg), L.R.C.P. (Lond.), M.R.C.S. (Eng.).
Editor of the authorised English translation of Nietzsche's works.

Wiesbaden, May 23rd, 1932.

CHEAPNESS AT ALL EVENTS.

To the Editor of THE LANCET.

SIR,—"Panic in the district." So runs the newspaper headline concerning an appointment of "matron-superintendent" to a mental defective colony shortly to be started.

The position is an interesting one as illustrating the relationship of local authorities to the Board of Control. The colony in question is to be run by a joint committee of two county and two borough councils. It is to cater at first for 200 patients; adolescents and adults of both sexes are to be accommodated. The buildings are to be an adapted mansion and outbuildings, and a large estate has to be worked and organised.

For the supreme control of this colony the administrative officer, a "matron-superintendent," is offered a salary of £160 a year (resident). The Board of Control is quoted as being entirely satisfied that the post can be adequately filled by such a person, *at this remuneration*. The local committee is therefore content. It is apparently nobody's business to assess the merits of the appointment to consider what qualities of personality and leadership, what psychological and cultural background can be obtained at such a rate of pay. Medical care and assessment are apparently secondary considerations, though the indefinite boundary between lunacy and deficiency is well known and is certain to give rise to difficulties.

The main consideration at every point is "cheapness." No one wants to spend on defectives: when driven to do so let the ultimate minimum be sought. Personnel?—the cheapest. Estate management and equipment?—the least possible. Research?—none.

"Panic in the district" is perhaps an exaggeration, but if it were fact it might be better than the apathy which allows public institutions to be run with so little imagination.

I am, Sir, yours faithfully,
A MEDICAL OBSERVER.

May 18th, 1932.

GEORGE EDWIN LOWE HOSPITAL.—An extension to this hospital at Sutton Coldfield, which forms part of the Princess Alice Orphanage (the Birmingham and Midland branch of the National Children's Home), was opened recently by Sir Arthur Steel-Maitland, M.P. The extension, which is the gift of Mrs. Lowe, takes the form of a sick room with an outside staircase providing access for infectious cases without traversing the main hospital building.

OBITUARY

JOHN CLOUGH THRESH, M.D. Vict., D.Sc. Lond., D.P.H., F.I.C.,

LATE M.O.H. FOR THE COUNTY OF ESSEX.

WE regret to announce the death of Dr. Thresh, the well-known sanitarian, which occurred at Chelmsford on May 23rd at the age of 82.

John Clough Thresh, the son of James Thresh, an engineer who worked in Peru, was born at Wakefield in 1850, and was educated privately and at Owens College, Manchester. He elected to make pharmaceutical chemistry his special subject, and graduated at the University of London in science, obtaining the D.Sc. in 1884. He later resolved on the study of medicine, and in 1889 took the M.B., Ch.B. Vict., proceeding to the M.D. in 1896, when he was awarded the gold medal for a thesis. He had already, in 1892, obtained the D.P.H. Camb. He remained for a period in Manchester where he was engaged in analytical work, at which time also he wrote a short text-book, entitled "Physics, Experimental and Mathematical," and investigated the claims of Buxton as a health resort by analysing the thermal springs. He also made an instructive report on excessive mortality in certain of the Manchester districts.

DR. THRESH.

Photograph by Elliott & Fry.

With his varied training and experience, and exceptional knowledge of chemistry, he was attracted to the public health service, became an early pioneer in establishing the importance of environmental hygiene, and attracted considerable attention by the thoroughness of his work. He was appointed the first county medical officer of health for Essex, and occupied that position for 22 years, when he became consulting medical officer, a post which he held until some nine years ago, when ill-health compelled him to resign. His work during his long period of office was of the first order, far-ranging, fruitful, and suggestive. His reports discussed such problems as excessive infantile mortality, the value of isolation hospitals, the housing of the agricultural labourer and working-classes, the preservation of and preservatives in food, and especially water and water-supplies. As a thesis for the degree of M.D. he had submitted an essay on this last subject, for which the University awarded him a special gold medal, and the dissertation proved to be the skeleton of a volume which he published in 1896. In this he summarised accepted knowledge in reference to water-supply, with special reference to drinking water. The chemical and bacteriological examination of drinking water was at that period already elaborate, but it was clear that in some cases the results were of questionable value, and public opinion on that matter was strengthened by facts which came out now and again during epidemics of typhoid fever. Water under chemical and bacteriological analysis could not be properly tested and found innocuous, while it was apparently the active agent in the spread of disease. Thresh's book supplied an interpretation of water analyses which was recognised as being logical, and proved to be of high practical value. He also carried out researches into the general purification of water and the effect of water upon health, the reactions of water to lead and copper, and was the inventor of various sterilisation processes; indeed, as a result of his experiments, the excess lime process of water treatment was recently sanctioned by Parliament as an efficient method in the purification of river sources.

His annual report on the Chelmsford and Maldon rural districts, of which he was medical officer at the same time as being the county M.O.H., formed excellent sanitary surveys of an English rural county, and a group of them (1900–1905) were published in book form. Here were discussed building laws in reference to cottage property, housing for the working-classes, prevalence of diphtheria and scarlet fever especially among children, the origin of isolated outbreaks of these scourges, and the cancer mortality of the population. In respect of the last inquiry the conclusions negatived a great many views then popular as to the ætiology, a low mortality from cancer being found to exist under the most diverse physical and sanitary conditions. In 1904 he expanded and added to his previous book on water-supplies and published a work, entitled the Examination of Waters and Water-supplies. This was written in the light of all the recent investigations for the isolation and recognition of the flora of sewage; it considerably modified the conclusions that had been drawn from many bacteriological examinations, for these, it was seen, might be as fallacious as those derived from chemical analysis. He urged further, the importance of making a careful inspection of the source of supply by those actually engaged in the examinations, and made important suggestions for the protection and control of water-supplies out of the results of a long experience. This book stamped Thresh as being one of our first authorities on the whole subject.

Thresh held many important public appointments and discharged many responsibilities. He was at different times honorary secretary to the British Pharmaceutical Congress, examiner in chemistry to the Pharmaceutical Society, lecturer in public health at the London Hospital, and examiner in State medicine at the University of London. He began his sanitary work when the organised study of public health in actual relation to the conditions of rural life was in its infancy, and during his long career many medical officers of health and workers in preventive medicine have benefited by his labours and his actual teaching. His precision of mind and the great skill, industry, and resource with which he faced any problem could not fail to impress deeply his assistants and pupils, and formed a valuable example for their work. These qualities of clear thought and capacity for research, in addition to knowledge and experience, made him in great demand as an expert witness in connexion, principally, with questions relating to water-supply, and his words were always listened to with close attention by any

Parliamentary committee or court before which he appeared. All who have noted the changes in public health administration and in the prevention of disease which have occurred in the last 50 years should deplore the death of one of the great pioneers. For many years he was a constant editorial contributor to THE LANCET, and during his period of active connexion with the paper we derived varied benefits from his counsel.

Dr. Thresh married in 1872, and his wife who predeceased him, was his constant help-mate throughout his long and strenuous public career. His home life was quiet and unostentatious, and only those who knew him well could fully realise his kindly nature or know of his many generous deeds. He was a reserved man, but his intimates knew his warmth of heart. He leaves three daughters to whom all sympathy will go out.

Sir Alexander Houston writes: "There is no country that will not mourn the death of Dr. Thresh, for his disciples and admirers were scattered over the habitable globe. He was a great administrator and a splendid teacher, and his knowledge and its versatility, combined with his patience and capacity for hard work, rendered him one of the most striking figures in the public health service. He will be chiefly remembered for his magnificent work on water-supply, where his influence was profound, embracing every aspect—epidemiological, chemical, bacteriological, and physical. He was equipped on all points with experience personally gained. Much of his work was original, all of it was characterised by meticulous accuracy and attention to detail. Although his fetish was pure water, he was extremely tolerant towards new ideas, and was always in the van in connexion with the trial of any proposed novel departures from old-established custom. The splendid new water-supply to Southend, treated by the excess lime method of purification, is a notable example of his prowess.

"Personally I shall miss him greatly, a friend of 40 years' standing, and his other disciples all over the world will mourn with me the loss of so distinguished a scientist, so estimable a man, and so irreplacable a figure in the world of water-supply."

Dr. JOHN JAMES BOYD, who died at Pretoria on May 3rd, at the age of 63, was a native of Mains, Dundee, and graduated in medicine at Glasgow in 1892. He became assistant medical officer of health for Southampton, and later medical officer for South Shields. Then in 1904 he left this country to take up the appointment of M.O.H. for Pretoria, capital of the Union of South Africa, where he was virtually the creator of the health department. In 1929, having reached the age limit, he left Pretoria for Salisbury, in Southern Rhodesia, where he held the same appointment; but last November he was obliged to relinquish it because of ill-health. During the war Dr. Boyd served in France with the British Expeditionary Force.

Dr. VALENTINE PRESTON PAXON died on May 7th in his twenty-eight year. He was serving as house surgeon at the Queen's Hospital for Children, when he contracted diphtheria, to which he succumbed after just over a week's illness. Educated at Eastbourne College, Paxon began his medical training at Caius College, Cambridge, and went on to St. Thomas's Hospital, qualifying in 1930. Afterwards he was house surgeon at the Royal Berkshire Hospital, Reading, where he gained affection and respect, and where he showed evidence of unusual aptitude for surgery. He took up his appointment at the Queen's Hospital for Children in February, and here again he had won the trust and affection of those with whom he worked.

Dr. WILLIAM HOWARD BLACKBURN, who died on May 11th, at the age of 39, had been medical officer of health for Lowestoft for the past five years. Born at Wallasey, he took the Natural Sciences Tripos at Cambridge in 1914, and qualified in 1916. After serving with a temporary commission in the Navy he returned to graduate in medicine at Cambridge, and obtained the D.P.H. in 1922. He then entered the public health service, in which he seemed likely to go far. A colleague writes of him that he was a man of exceptional merit and personality. "He had an enormous capacity for work, and it was this intense love for his work which unfortunately laid him low, in that his illness commenced with influenza when working at high pressure during an outbreak of diphtheria at Lowestoft. Despite his illness, however, he would not give up work and was in harness until practically the last, earning from the mayor of Lowestoft the tribute that 'it was simply the way he gave himself up to his duty that was the cause of his death.' Personally he was most lovable, ever ready to give a helping hand, and ever cheerful. Everybody who knew him regrets not only the passing of a colleague of the highest type, but of a staunch friend." Dr. Blackburn had held resident appointments at both St. Bartholomew's and St. George's Hospitals. He was formerly deputy M.O.H. for St. Helens.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. (retd.) A. R. Thomas to be Surg. Rear Admiral (retd.).

Surg. Comdr. H. B. Padwick is placed on the retd. list at own request with rank of Surg. Capt.

Surg. Comdr. H. W. Nicholls is placed on the retd. list with rank of Surg. Capt.

Surg. Comdr. W. C. Carson is placed on the retd. list.

The following appointments are notified:

Surg. Comdrs. A. J. Tozer to *Resource*; A. E. P. Cheesman to *Victory*, for Haslar Hospital, for course; W. J. Morris to *Frobisher*, as Fleet Medical Offr.; and R. F. Quenton to *Comus*.

Surg. Lt.-Comdr. (D.) W. E. A. Sampson to *Victory* for R.N. Barracks.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. S. C. Suggit to be Surg. Lt.

Surg. Lt. (D) G. A. O. White to be Surg. Lt.-Comdr. (D).

ROYAL ARMY MEDICAL CORPS.

Maj. F. R. Coppinger to be Lt.-Col.

The undermentioned Lts. (on prob.) are confirmed in their rank: H. C. Morton, A. D. Low, and J. N. Low.

PRIZE WINNERS IN THE R.A.M.C.

The following are names of the prize winners in the Junior Class of Instruction for Officers of the Royal Army Medical Corps and Indian Medical Service at the Royal Army Medical College, at the session which terminated on April 29th last:

Lt. F. A. B. Sheppard (Melbourne University), I.M.S., Herbert Prize (Highest Aggregate) and Fayer Memorial Prize (Pathology); Lt. P. T. L. Day (Guy's Hospital), R.A.M.C., Marshall Webb Prize (T[illegible] Administration); Capt. W. Happer[illegible] I.M.S., Parkes Memorial Prize (Hygiene); Lt. J. M. [illegible] (St. Mary's Hospital), R.A.M.C., De Chaumont Prize (Hygiene); Lt. M. Sendak (St. Mary's Hospital), I.M.S., Ranald Martin Prize (Tropical Medicine); Lt. R. D. Macrae (Aberdeen University), R.A.M.C., Tulloch Memorial Prize (Pathology); Lt. R. I. Reid (Trinity College, Dublin), I.M.S., 1st Montefiore Prize (Military Surgery); Lt. W. A. N. Marrow (Middlesex Hospital), I.M.S., 2nd Montefiore Prize (Military Surgery).

MEDICAL NEWS

University of Oxford.

It is proposed that the honorary degree of D.C.L. shall be conferred on Lord Moynihan on June 1st, before he delivers the Romanes lecture. The subject of the lecture is the Advance of Medicine.

Society of Apothecaries of London.

At recent examinations the following candidates were successful:

MASTERY OF MIDWIFERY.

R. G. Bradford, W. A. Rees, and J. L. M. Wood.

Territorial Army Medical Officers' Association.

The annual meeting and dinner of this association will be held at the Dorchester Hotel on Saturday, May 28th. The meeting will be at 7.30 P.M. and the dinner at 8 P.M. All Territorial Army medical officers (active and retired) are invited to be present.

Demonstrations of Contraceptive Technique.

The Society for Constructive Birth Control and Racial Progress informs us that at 2.30 P.M. on Wednesday, June 1st, demonstrations of contraceptive technique will be given to practitioners and senior medical students. Application for tickets should be made to the hon. secretary of the Society, at 108, Whitfield-street, London, W.1.

British Health Resorts Association.

The fifth conference, for the spas of Mid-Wales, was held at Llandrindod Wells from May 20th–23rd, under the chairmanship of Sir Humphry Rolleston, the delegates being welcomed by Dr. Miller Kerr, president of the local medical society. It was, said Sir Humphry, one bright spot of the financial crisis that it had turned attention to the value of British places, products, and methods of physical treatment. Success depended on the combined action of local authorities and medical men: the latter should ascertain what kinds of patients and ailments were suitable for treatment, and how treatment could be applied to the greatest advantage. The meeting was made the occasion for the presentation of a statement (see p. 1164) in appreciation of the home spas by the medical advisory committee of the Association. In presenting this statement, Dr. Fortescue Fox suggested a survey of the medicinal waters of the country. Dr. W. Langdon Brown, in opening the discussion, said that a striking feature of twentieth century medicine had been a return to the Æsculapian cult; treatment by sunlight, fresh air, baths, the drinking of waters, and psychological exploration. The rise of scientific medicine in the nineteenth century had, curiously enough, been accompanied by a neglect of all these methods and by a concentration on the end-results of disease. Dr. E. A. Goulden (Llandrindod) discussed the rôle of water-drinking in preventive medicine. Dr. George Worthington described the uses of the saline waters of Llandrindod, sometimes in very large doses, as a method of gastro-intestinal lavage, often beneficial in chronic toxæmias due to digestive catarrh. Mr. S. Judd Lewis, D.Sc., explained the new classification of medicinal waters which had already been approved in several European countries (see THE LANCET, 1931, i., 31). He laid emphasis on the significance of elements present in minute quantities, such as iodine, manganese, copper, and boron. At the afternoon session Sir William Willcox recalled the mention of Llandrindod by Pliny; the medical value of this and of the waters at Llanwrtyd and Trefriw justified the movement for their more complete development. Dr. R. Ackerley pointed out that Llandrindod offered, for those who needed them, the two characteristics of a bracing climate—dryness and movement of air. Dr. William Byam held that in general the health resorts should be regarded as places both for cure and convalescence, not omitting the investigation of disease. Among health resorts, the spas should be the specialists, whilst coast resorts might be regarded as general practitioners. The former should not deal with all and sundry, but concentrate on the particular values of the place. Dr. J. W. Patterson (Droitwich) believed there was much wastage in the examination of cases at spas, and advocated the use of an approved questionaire in the interview with rheumatic patients. Prof. Douglas Stanley (Birmingham) pointed out that the spa practitioner had an insufficient grasp of the class of patients cured by the osteopath, which could be equally benefited at the health resorts. There should, he agreed, be a more careful estimation of the type of cases suitable for particular spas. Dr. John Murray (Llandrindod) appealed for facilities at the spas for the accommodation and treatment of industrial workers, who broke down in early adult life with rheumatic and other preventable diseases. On Sunday most of the party were entertained to luncheon by the Mayor of Aberystwith, whilst others visited the sulphuretted springs at Llanwrtyd. The programme concluded with a special performance of the Royal Mountain Ash Welsh Male Choir.

London Hospital Medical College and Dental School.

Prizes and certificates for the current year will be presented by Sir William H. Goschen, chairman of the house committee of the hospital, at 3 P.M. on Friday, June 24th, in the College Library.

Argentine Medical Students in England.

Of nine Argentine students now visiting Great Britain under the leadership of Dr. Carlos Waldorp, three are studying medicine. From June 16th they will make a tour of some of the London hospitals and medical schools, and will also visit Frimley Sanatorium and the Treloar Hospital at Alton.

The New Freemasons' Hospital.

On May 19th, with full Masonic ceremony, the Duke of Connaught, Grand Master of the Grand Lodge of English Freemasons, laid by electric contact the dedication stone of the new Freemasons' Hospital at Ravenscourt Park, Hammersmith. Since only a relatively small number of people could have been placed on the hospital site, the ceremony took place at Olympia, whence, as the Duke of Connaught laid a small duplicate, the actual stone was placed in position by electricity. The Prince of Wales, the Duke of York, Prince George, and Prince Arthur of Connaught were also present, with 8000 other Masons and 3000 ladies. The new hospital, to replace the existing building in Fulham-road, will cost £300,000 and will contain 180 beds; the present one has only 50. It will do much to meet the growing demand for accommodation for Masonic paying patients. It is expected that the new hospital, which stands in between five and six acres of grounds, will be opened in the summer of next year.

Fellowship of Medicine and Post-Graduate Medical Association.

The first of a series of four lecture-demonstrations on Wednesdays at 5 P.M. will be given on June 1st at the Royal Free Hospital by Dame Louise McIlroy. Prof. Arthur J. Hall will give the first of three lectures on Epidemic Encephalitis at 11, Chandos-street, W., at 8.30 P.M., on Thursday, June 2nd. Dr. Knyvett Gordon will give an epidiascope and laboratory demonstration on Splenic Enlargement at 10, Bedford-square, W.C., at 8.30 P.M., on Wednesday, June 1st. Forthcoming all-day courses include: medicine, surgery, and the specialties, at the Prince of Wales's Hospital, Tottenham (June 6th to 18th); gynæcology, at the Chelsea Hospital for Women (June 6th to 18th); diseases of the chest, at the Victoria Park Hospital (June 6th to 18th). A course in diseases of children will be held from June 25th to July 9th at the Children's Clinic and other hospitals, and a week-end course in diseases of the chest will be given on June 25th and 26th at the Brompton Hospital. A fortnight's course in dermatology will be held at the Blackfriars Skin Hospital from June 27th to July 9th, in the afternoons. All the above courses and lectures are open only to members of the Fellowship. The secretary's address is 1, Wimpole-street, W.1.

The Guardianship Society.

This society, whose headquarters are at Brighton, is now in its twentieth year, and continues to extend its work. Its object is the care and supervision of the mentally and physically defective and other special cases by boarding them out in families, assisting them to obtain training and employment suited to their capabilities, visiting them, and taking a friendly interest in their moral and material welfare. It having been decided to end the financial year on March 31st, instead of Sept. 30th, the report submitted at the annual meeting on April 27th covered a period of 18 months. During that period no fewer than 1038 cases were under its care, and the sum disbursed on behalf of patients amounted to £47,009. Only £2046 went in administrative expenses; the hon. secretary, Miss Grace Woodhead, who has held that post since the inception of the society, has, it was stated, "not only worked seven days a week for nothing, but has put a great deal of money into the organisation." The report emphasised the useful work which was done on two training farms in Sussex; described the activities of the clinic for nervous disorders as one of the finest branches of the work, resulting in saving by far the largest proportion of the patients from the distress of becoming certified; and announced that in addition to the three occupation centres at Brighton and one at Hove, there had been added one at Peacehaven and one at Heathfield, while, in addition, workers visited the Mental Hospital at Haywards Heath once a week and held a class among the women patients. At the conclusion of the annual meeting an address was given by Dr. J. R. Rees, deputy director of the Institute of Medical Psychology, London, on the wider aspects of mental disorders.

Parliamentary committee or court before which he appeared. All who have noted the changes in public health administration and in the prevention of disease which have occurred in the last 50 years should deplore the death of one of the great pioneers. For many years he was a constant editorial contributor to THE LANCET, and during his period of active connexion with the paper we derived varied benefits from his counsel.

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"Personally I shall miss him greatly, a friend of 40 years' standing, and his other disciples all over the world will mourn with me the loss of so distinguished a scientist, so estimable a man, and so irreplacable a figure in the world of water-supply."

Dr. JOHN JAMES BOYD, who died at Pretoria on May 3rd, at the age of 63, was a native of Mains, Dundee, and graduated in medicine at Glasgow in 1892. He became assistant medical officer of health for Southampton, and later medical officer for South Shields. Then in 1904 he left this country to take up the appointment of M.O.H. for Pretoria, capital of the Union of South Africa, where he was virtually the creator of the health department. In 1929, having reached the age limit, he left Pretoria for Salisbury, in Southern Rhodesia, where he held the same appointment; but last November he was obliged to relinquish it because of ill-health. During the war Dr. Boyd served in France with the British Expeditionary Force.

Dr. VALENTINE PRESTON PAXON died on May 7th in his twenty-eight year. He was serving as house surgeon at the Queen's Hospital for Children, when he contracted diphtheria, to which he succumbed after just over a week's illness. Educated at Eastbourne College, Paxon began his medical training at Caius College, Cambridge, and went on to St. Thomas's Hospital, qualifying in 1930. Afterwards he was house surgeon at the Royal Berkshire Hospital, Reading, where he gained affection and respect, and where he showed evidence of unusual aptitude for surgery. He took up his appointment at the Queen's Hospital for Children in February, and here again he had won the trust and affection of those with whom he worked.

Dr. WILLIAM HOWARD BLACKBURN, who died on May 11th, at the age of 39, had been medical officer of health for Lowestoft for the past five years. Born at Wallasey, he took the Natural Sciences Tripos at Cambridge in 1914, and qualified in 1916. After serving with a temporary commission in the Navy he returned to graduate in medicine at Cambridge, and obtained the D.P.H. in 1922. He then entered the public health service, in which he seemed likely to go far. A colleague writes of him that he was a man of exceptional merit and personality. "He had an enormous capacity for work, and it was this intense love for his work which unfortunately laid him low, in that his illness commenced with influenza when working at high pressure during an outbreak of diphtheria at Lowestoft. Despite his illness, however, he would not give up work and was in harness until practically the last, earning from the mayor of Lowestoft the tribute that 'it was simply the way he gave himself up to his duty that was the cause of his death.' Personally he was most lovable, ever ready to give a helping hand, and ever cheerful. Everybody who knew him regrets not only the passing of a colleague of the highest type, but of a staunch friend." Dr. Blackburn had held resident appointments at both St. Bartholomew's and St. George's Hospitals. He was formerly deputy M.O.H. for St. Helens.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. (retd.) A. R. Thomas to be Surg. Rear Admiral (retd.).

Surg. Comdr. H. B. Padwick is placed on the retd. list at own request with rank of Surg. Capt.

Surg. Comdr. H. W. Nicholls is placed on the retd. list with rank of Surg. Capt.

Surg. Comdr. W. C. Carson is placed on the retd. list.

The following appointments are notified:

Surg. Comdrs. A. J. Tozer to *Resource*; A. E. P. Cheesman to *Victory*, for Haslar Hospital, for course; W. J. Morris to *Frobisher*, as Fleet Medical Offr.; and R. F. Quenton to *Comus*.

Surg. Lt.-Comdr. (D.) W. E. A. Sampson to *Victory* for R.N. Barracks.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. S. C. Suggit to be Surg. Lt.

Surg. Lt. (D) G. A. O. White to be Surg. Lt.-Comdr. (D).

ROYAL ARMY MEDICAL CORPS.

Maj. F. R. Coppinger to be Lt.-Col.

The undermentioned Lts. (on prob.) are confirmed in their rank: H. C. Morton, A. D. Low, and J. N. Low.

PRIZE WINNERS IN THE R.A.M.C.

The following are names of the prize winners in the Junior Class of Instruction for Officers of the Royal Army Medical Corps and Indian Medical Service at the Royal Army Medical College, at the session which terminated on April 29th last:

Lt. F. A. B. Sheppard (Melbourne University), I.M.S., [illegible] Prize (Highest Aggregate) and Fayer Memorial [illegible] P. T. L. Day (Guy's Hospital), [illegible] Prize (Military Medical Admini- [illegible] Happer (Edinburgh University), [illegible] Prize (Hygiene); Lt. J. M. Low [illegible] R.A.M.C., De Chaumont Prize (Hygiene); Lt. M. Sendak (St. Mary's Hospital), I.M.S., Ranald Martin Prize (Tropical Medicine); Lt. R. D. Macrae (Aberdeen University), R.A.M.C., Tulloch Memorial Prize (Pathology); Lt. R. I. Reid (Trinity College, Dublin), [illegible] Prize (Military Surgery); Lt. [illegible] I.M.S., 1st [illegible] Hospital), I.M.S., 2nd [illegible] W. A. N. [illegible] Montefiore Prize [illegible]

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Eye, and Genito-Urinary Out-patients. 4.15 P.M. (Special lecture), Dr. Konstam: Pulmonary Tuberculosis.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients.

SATURDAY.—9 A.M. to 1 P.M., Throat, Nose, and Ear Operations, Medical Wards, Children's Medical Out-patients, Surgical Wards, Surgical Out-patients. The Lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, June 2nd.—4.15 P.M. (Tea at 4 P.M.), Mr. H. S. Souttar: Surgical Applications of Radium.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, May 30th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Mr. Leslie Paton: Optic Atrophy.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Parkinsonism.

WEDNESDAY, June 1st.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Senile Cerebellar Syndromes.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Peripheral Neuritis.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, June 1st.—4 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, May 31st.—3.15 P.M., Mr. R. Wade: Some Modern Changes in Anæsthesia.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, June 3rd.—4 P.M., Mr. N. Asherson: Otalgia.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.

WEDNESDAY, June 1st.—3 P.M., Dr. C. Dukes: Tumours of the Lower Urinary Tract.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.

WEDNESDAY, June 1st.—4.30 P.M., Dr. Finzi: Deep Therapy.

Appointments

MOLL, H. H., M.D. Rome, M.R.C.P. Lond., has been appointed Hon. Assistant Physician to the General Infirmary at Leeds.

London County Council: WALMSLEY, N. W., M.D., Ch.B. Liverp., D.P.H., Medical Superintendent, South Western Hospital. PFISTER, Miss HILTA I. C., M.B., Ch.B. Edin., D.P.H., Assistant Medical Officer, Grade I., St. Alfege's Hospital. WILLIAMS, B., F.R.C.S. Edin., M.B., Ch.B. Edin., Assistant Medical Officer, Grade I., Hammersmith Hospital.

Certifying Surgeons under the Factory and Workshop Acts: Hicks, E. B., L.R.C.P., L.R.C.S. Ed., L.R.F.P.S. Glasg (Easingwold); MacGirr, P., M.B., B.Ch.N.U.I. (Meltham).

Vacancies

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

All Saints' Hospital for Genito-Urinary Diseases, Austral-street, West-square, [illegible] *S.E.*—Res. H.S. At rate of £100.

B[illegible]*d Dispensary.*—Res. Surg. O. £300.

B[illegible]*onsdale Hospital.*—H.S. £175.

L[illegible] Second H.S. At rate of £140.

Benenden, Kent National Sanatorium.—Res. Asst. M.O. £300.

Birmingham City Mental Hospital.—Jun. Asst. M.O. £350.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.

Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Burton, [illegible] Asst. H.P. At rate of £150.

Cancer [illegible] *S.W.*—H.S. At rate of £100.

Cardiff [illegible] Ophth. Surgeon.

Carlisle, Cumberland Infirmary.—Second H.S. £155.

Carshalton, Queen Mary's Hospital.—Res. Asst. M.O. £350.

Chesterfield and North Derbyshire Hospital.—H.S. £150.

Coventry and Warwickshire Hospital.—Res. Cas. O. £125.

Derby, Derbyshire Royal Infirmary.—H.S. for General Surgery. £150.

Doncaster Royal Infirmary.—H.S. and Cas. H.S. Each at rate of £175.

Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.

Dundee Royal Infirmary.—Hon. Asst. Visiting M.O. for Diseases of the Skin.

Durham County Council Education Department.—Asst. Oculist. £500.

East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £200.

Hornsey Borough.—Asst. M.O.H., &c. £600.

Ilford, King George Hospital.—H.S. At rate of £100.

Indian State Railways.—District M.O. Rs.650 per mensem.

Infant Hospital, Vincent-square, Westminster.—H.P. At rate of £75.

Ipswich, East Suffolk and Ipswich Hospital.—Res. M.O. £350.

Jerusalem, St. John Ophthalmic Hospital.—H.S.

Lancaster County Mental Hospital.—Asst. M.O. £500.

Liverpool, New Liverpool and Samaritan Hospital for Women, Catherine-street.—H.S. At rate of £100.

Llangwyfan, nr. Denbigh, North Wales Sanatorium.—Jun. Asst. Res. M.O. £250.

L.C.C. Mental Hospital Service.—Asst. M.O. £475.

London Hospital, E.—Asst. Surgeon to Ear, Nose, and Throat Dept.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester, St. Mary's Hospital, Whitworth-street.—H.S. At rate of £50.

Miller General Hospital, Greenwich-road, S.E.—Cas. O. At rate of £150. Also H.S. and H.P. Each at rate of £100.

National Hospital, Queen-square, W.C.—Asst. Pathologist. £250.

Newcastle General Hospital.—H.S. At rate of £150.

North-Western Fever Hospital, Lawn-road, Hampstead, N.W.—H.P. At rate of £80.

Nottingham General Hospital.—Res. Cas. O. At rate of £200.

Oxford, Warneford Mental Hospital.—Second Asst. M.O.

Preston, Royal Infirmary.—Cas. O. £150.

Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—Res. Med. Supt. At rate of £120.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Two Res. Anæsthetists. Each at rate of £100.

Royal Air Force.—Vacancies.

Royal Chest Hospital, City-road, E.C.—Med. Regs. £50.

Royal Free Hospital, Gray's Inn-road, W.C.—H.S.'s, H.P.'s, &c. All at rate of £100. H.P. to Children's Dept. Also Asst. Phys.

St. George-in-the-East Hospital, Raine-street, Wapping, E.—Res. Asst. M.O. £350.

St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—In-patient Med. Reg. £50.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—Res. Surg. O. At rate of £150.

St. Mary's Hospital for Women and Children, Plaistow, E.—Two Hon. Asst. Phys. Also Clin. Asst for Med. Out-Patients' Dept.

St. Stephen's Hospital, Fulham-road, S.W.—Clin. Asst. At rate of £100.

St. Thomas's Hospital, London, S.E.—Two Med. Regs. Also Physician for Skin Dept.

Salford City.—Jun. Asst. for Venereal Diseases Treatment Centre. At rate of £500.

Salford Royal Hospital.—Med. Reg. £250. Also H.P.'s and H.S.'s. Each at rate of £125.

Salisbury General Infirmary.—Two H.S.'s. Each £150.

Sheffield, Jessop Hospital for Women.—Sen. Res. O. At rate of £120.

Shrewsbury, Royal Salop Infirmary.—Cas. O. and Res. Anæsthetist. At rate of £160.

Southampton, Royal South Hants and Southampton Hospital.—Radium Officer. £600.

Stockport Infirmary.—Jun. H.S. £150.

Truro, Royal Cornwall Hospital.—H.S. £170.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Surg. to Ear, Nose, and Throat Dept.

Wales, University of.—Lord Merthyr Research Scholarship, £200, and Mrs. John Nixon Research Scholarship and Ewen Maclean Research Scholarship. Each £150.

Warrington Infirmary and Dispensary.—Jun. H.S. £175.

Warwick, Hertford Hill, King Edward VII. Memorial Sanatorium.—Jun. M.O. At rate of £200.

West London Hospital, Hammersmith-road. W.—H.P. and H.S. Each at rate of £100.

Westminster Hospital Annexe, 66, Fitzjohn's-avenue, Hampstead. Res. M.O. £200.

Weston-super-Mare General Hospital.—Res. H.S. £150.

Willesden General Hospital, N.W.—Clin. Assts. for Out-patient Department.

Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £150.

Births, Marriages, and Deaths

MARRIAGES.

SMITH—SOWTER.—On May 18th, at St. Patrick's Church, Soho, Leslie Muir Smith, M.R.C.S., L.R.C.P., to Kathleen Adela Sowter, daughter of Mr. John Sowter, Becmead, Eastbourne.

STALLARD—PAGE.—On May 21st, at St. Bartholomew's the Great, London, by the bride's father, H. Bristow Stallard, F.R.C.S., to Gwynneth Constance, daughter of Canon and Mrs. F. G. T. Page, of Warwick.

DEATHS.

BENSON.—On May 22nd, Alfred Benson, M.A., M.B., B.Ch. Oxf., of Maida Vale, W.

COX.—On May 20th, at a nursing home, Robert Cox, B.A., M.B., B.Ch., B.A.O., of Calton-avenue, Dulwich, S.E.

FOWLER.—On May 15th, at Cotford House, Thornton Heath, Charles Owen Fowler, M.D., M.R.C.S., J.P., aged 72.

HARRIS.—On May 17th, Percy Reeves Traer Harris, M.R.C.S., F.S.A., of York House, Kensington, aged 70 years.

OWST.—On May 17th, at a nursing home, Arthur Robert Owst, F.R.C.S. Edin., of Puckpool, Ilkley.

SAUNDERS.—On May 18th, at the Beeches, Wales, Sheffield, Matthew Browne Saunders, M.B.

THRESH.—On May 23rd, at Spergula, Chelmsford, John Clough Thresh, M.D., D.Sc., late medical officer of health to the County of Essex, in his 82nd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

MR. DIGBY COTES-PREEDY, K.C., has been appointed Recorder of Oxford. He qualified as L.S.A. Lond. in 1903, and was house physician at St. George's Hospital before being called to the Bar in 1904.

THE Anglo-French Drug Co., Ltd., announce that on and after June 1st the address of the firm will be 11 and 12, Guilford-street, W.C.1. Telephone: Holborn 6011.

The International Trachoma Prize.

It is announced that this prize, offered by the Royal Hungarian Minister of Public Welfare, is to be divided equally between Dr. Ugo Lumbroso (Tunis) and Dr. J. Taboriski (Palestine). Honourable mention is given to Dr. Cattaneo (Sassari), Dr. P. Olitsky (New York), Drs. Rötth and Kanyó (Budapest), and Dr. C. Trapezontzewa (Moscow). The prize is of the value of 2000 Swiss francs, and the jury of award consist of Mr. A. F. MacCallan (London), Dr. Victor Morax (Paris), Dr. Luigi Maggiore (Bari), Prof. Carl Prausnitz (Breslau), and Prof. Emile de Grósz (Budapest).

Southport Infirmary.

On May 6th Sir Hilton Young, the Minister of Health, opened a new maternity hospital of 32 beds given to the Southport Corporation by Miss Christiana Hartley. The new building is in the grounds of the Southport Infirmary, of which it constitutes an extension, and has cost £25,000. The other extensions of the infirmary, which are now complete, include two additional wards for men and women, and six additional private wards for paying patients. The operating block has been enlarged and modernised, the radiological department has been remodelled, and a nurses' home has been erected. The total cost of the improvements is £67,000.

Hospital Treatment for the Middle Classes.

A meeting was held at King's College Hospital a few days ago to inaugurate a subscription scheme to enable people of the middle classes to obtain hospital treatment without great expenditure. It is a Mutual Benefit Association, on the lines of the Hospital Saving Association, which provides for the poorer classes, and entitles subscribers to 21 days' free treatment in a private ward at the hospital. The rates vary with the number of people concerned, and there is no income limit. The annual subscription for a single person is £1 1*s.*, for a married couple £1 11*s.* 6*d.*, and for a couple with children under 16, £2 2*s.* Subscribers will be required to declare on joining that they are in sound health and that neither they nor their dependents are in need of hospital treatment. The subscriber may make his own arrangement with a member of the consulting staff for the payment of his fees or with the house governor, who is authorised to arrange reduced fees to meet the circumstances

PARLIAMENT

NOTES ON CURRENT TOPICS.

Reassembly of the House of Commons.

THE House of Commons reassembled after the Whitsuntide recess on Monday, May 23rd.

HOUSE OF COMMONS.

MONDAY, MAY 23RD.

Rural Housing.

Mr. THOMAS WILLIAMS asked the Minister of Health what progress had been made with the two million pounds scheme for rural housing initiated by the Ministry in July, 1931.—Mr. E. BROWN (Parliamentary Secretary to the Ministry of Health) replied: 114 Councils have been informed that the committee appointed under the Act of last year are prepared to entertain applications in respect of 1904 houses for the agricultural population, and these councils have for some time been preparing their detailed proposals. Only seven have as yet reached the stage of inviting tenders.

Housing in England and Wales.

Mr. HICKS asked the Minister of Health what was the present estimated shortage of housing accommodation in England and Wales; what was the number of parlour-houses and flats erected in each of the months January, February, and March, 1932; and what action was being taken by the Ministry of Health to urge local authorities to press forward building schemes.—Mr. E. BROWN replied: My right hon. friend regrets that he has no data on which to base such an estimate as is asked for in the first part of the question. Nor is he able to state the total numbers of parlour-houses and flats erected from time to time in England and Wales. The numbers of houses and flats erected with State assistance and completed in the three months mentioned were 6218, 6402, and 5916. As regards the last part of the question I would refer the hon. Member to the answer given to the question put by him on the 12th of this month.

Mr. LUNN asked the Minister of Health how many houses were being built by local authorities in May, 1931, and how many in May, 1932.—Mr. E. BROWN replied: 35,449 dwellings were under construction by local authorities at *April 30th, 1931, and 33,493 at April 30th, 1932.*

TUESDAY, MAY 24TH.

Insanitary Ships in Port of Manchester.

Mr. LOGAN asked the President of the Board of Trade if his attention had been drawn to the fact that more than 30 per cent. of British ships entering the port of Manchester were found to be insanitary; that the death-rate of British seamen was over 70 per cent in excess of the normal mortality-rate; and what action was being taken to improve the quarters of the crew and the sanitation on British ships.—Mr. RUNCIMAN replied: I am aware that the medical officer of health to the port sanitary authority of Manchester has stated in his report for 1930 that of 1324 British vessels entering the port in that year, 395 have been found on inspection to be insanitary. This number covers defective as well as insanitary vessels, and in many cases the ships had small defects, due to voyage damage or wear and tear, which were remedied before the ships sailed again. The action taken to improve the crew accommodation in British ships is indicated in the statement the President of the Board of Trade circulated in the official report of July 7th last. As regards mortality due to disease arising from the character of the occupation, the special investigation, of which this House was informed on Dec. 24th, 1929, has been completed and the report will be published as soon as possible. It will show that the shipping industry does not compare unfavourably with other industries in this respect.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY, June 1st.—SURGERY. Annual Provincial Meeting at the General Infirmary, Leeds.

FRIDAY.—5.30 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.) Election of Officers and Council.

FRIDAY.—5 P.M., OPHTHALMOLOGY. Election of Officers and Council. LARYNGOLOGY AND OTOLOGY. Summer Meeting at the Eye and Ear Hospital, Portsmouth. Papers: Mr. G. H. Livingstone: The Nasal Airway of the New-born Child. Dr. G. Scott Williamson: The Genesis of Polypi. Mr. Lionel Colledge: Referred Pain. Discussion: Types of Nasal Inflammation which Produce Inflammatory Conditions of the Ear. (Openers: Mr. H. S. Barwell and Mr. Somerville Hastings.)

SATURDAY.—LARYNGOLOGY AND OTOLOGY. Second day at Portsmouth.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

THURSDAY, June 2nd.—Dr. J. W. McNee: Liver and Spleen—their Clinical and Pathological Associations. (First Croonian lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 30th, to SATURDAY, June 4th.—CLINICAL PATHOLOGY, 10, Bedford-square, W.C. Epidiascope and laboratory demonstration by Dr. Knyvett *Gordon* on Wed., at 8.30 P.M., on Splenic Enlargement.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Lecture on Epidemic Encephalitis by Prof. Arthur J. Hall, at 8.30 P.M., on Thurs.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. *Demonstration of Antenatal Treatment* by Prof. Dame Louise McIlroy on Wed. at 5 P.M.—(The above courses and lectures are open only to Members of the Fellowship of Medicine.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, May 30th.—10 A.M. to 1 P.M., Gynæcological Wards, Genito-Urinary [illegible] Skin Department[illegible] Surgical Wards. 2 to [illegible] Wards, Medical, Surgi[illegible] Out-patients. 4.15 P.M. (Special Demonstration, *Mr. Gibb: Eye Cases.*

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Thr[illegible] Dental Departments. 2 to 4 P.M., [illegible], and Throat Out-patients.

WEDNESDAY, June 1st.—10 A.M., to 1 P.M., Children's Medical [illegible] Medical *Wards.* 2 *to* 4 P.M., Gynæcol[illegible] al, Surgical, and Eye Out-pati[illegible] Diseases Demonstration.

e with Memorandum 153/M.C.W., of the Ministry Health, the most recent information forthcoming m laboratory research and from the analysis of statistics of birth control clinics. There took ce four sessions. At the first, held on Friday ernoon under the chairmanship of Sir Thomas rder, the President of the Association, a summary s given of researches which may yield the contra- ptive methods of the future. Prof. Lancelot gben and Mr. C. W. Bellerby outlined the relevant rk done up to date on temporary sterilisation by rmonic methods, and Dr. L. W. Cann gave an ount of methods by which a similar result y prove to be obtainable by the injection of rmatoxins. On Saturday morning a session was roted to spermicidal preparations and their effects. . C. P. Blacker began by describing from the chair steps by which the researches conducted in the t four years by the speakers who were to follow n were initiated by the Birth Control Investigation mmittee. These researches were planned with a w to discovering a really efficient spermicidal paration which would enable the woman to dis- ase with the use of rubber occlusive appliances. . J. R. Baker, D.Phil., then described the work has recently done in collaboration with Mr. J. M. lland, D.Sc., which resulted in the discovery of the ry high spermicidal power of quinols and quinones. e biochemical action of these substances and their rivatives is technically discussed in a valuable per by Dr. Gulland in the *Biochemical Journal* 932, xxvi., 32). Six of these have been discovered ich are capable of killing in the course of half an ur guinea-pig spermatozoa in the extraordinarily ute concentration of 1/52,200. Prof. H. W. orey gave an account of his recent work on the hicles or bases in which the chemical spermicide ust be incorporated. It has been proved that ese bases can exert a contraceptive action by echanically impeding the ascent of spermatozoa to the uterus. Lastly, Dr. C. I. Voge described me of the spermicidal preparations with which e market has recently been flooded in Germany, e United States, and this country. Over 100 of ese are now obtainable.

In the course of the afternoon session, under the airmanship of Dr. Killick Millard, a discussion ok place of the methods now in use at clinics. No w data have been collected and analysed since e publication of the fourth report of the Inter- tional Medical Group for the Investigation of ntraception referred to above, which remains the ost complete summary of our existing knowledge at has yet appeared. Mrs. Enid Charles. Ph.D., gave preliminary account of the analysis of three sources statistical material which she has undertaken, the lient outcome of which confirms a finding of the ambridge birth control clinic that the sheath, when roperly used, is the most reliable of all methods.

On Sunday morning a discussion took place on the räfenberg ring, under the chairmanship of Sir umphry Rolleston. Papers were read by Mr. H. M. arleton, Ph.D., who has placed such rings in the uterine orns of over 100 rabbits, and by Dr. Helena Wright. r. Carleton described an interesting and important nding that silver may be chemically attacked in he uterus so as to form silver sulphide, the ring ecoming, in the process, brittle and liable to break. he general consensus of opinion was that the räfenberg silver ring is a dangerous and unreliable ontraceptive, and that if intra-uterine rings are to e used at all for contraceptive purposes, they should e made of gold, which does not form a sulphide, and ot of silver.

The chairman informed the meeting that the ational Birth Control Association was prepared to rrange a similar conference next year, and, if desired, n subsequent years, and a unanimous desire was xpressed that this should be done. Since these onferences will be non-propagandist in aim, and will e limited to the presentation of new information rising from laboratory research and clinical experience, they will certainly prove useful to medical practitioners who are interested in birth control in an administrative or private capacity.

The Seventh International Conference.

The proceedings of the Seventh International Birth Control Conference organised by Mrs. Margaret Sanger and held at Zürich in September, 1930, an account of which appeared in THE LANCET (1930, ii., 650), have been issued in book form.[2] The volume is divided into four parts. The first contains a discussion of various contraceptive methods, including the vaginal and cervical pessaries, the intra-uterine silver ring, and various soluble preparations.

Sections are included dealing with temporary sterilisation by biological methods, and permanent surgical sterilisation. The second part contains a discussion of abortion, and the third consists of reports from birth control clinics in the United States, England, Germany, Russia, Austria, Holland, Denmark, India, China, and Japan. English readers will be interested in an account of the Wives' Clinic at Sholapur, founded by Captain A. P. Pillay in 1929. The latter writes that despite the antagonistic influence of Indian religions, the interference of the mother-in-law even in matters relating to the marital relations of their sons and their wives, the prevalence of polygamy and the fatalism which characterises the Indian outlook on life, " our experience has convinced us that the subject can be popularised in this country as easily as in other countries, provided that funds are available." The fourth and last part of the volume consists of a lucid and impartial summary, compressed into 10 pages, of the first three parts, by Dr. Hannah Stone. The perusal of this book will convince the reader of the progress which the birth control movement has made in this country compared with continental countries. It would indeed appear that one of the objects in Mrs. Sanger's mind in organising the conference was to educate the medical profession in Germany on this subject. The discussions which took place at the different sessions are reported verbatim. An unduly large part in these was taken by German speakers, who were somewhat verbose. The papers on research and the analyses of clinic statistics furnished by the English and American delegates proved to be much more thorough and comprehensive than those forthcoming from any other country. From this book there will not be discovered any new contraceptive method, and little will be gleaned that was not previously known. The conference is likely to attain to historic rather than scientific importance. The translation of the German papers and speeches and the general editing of the proceedings have been very well done.

A Physician's Manual.

For a long time a need has been felt for a book on contraception written not for the layman—many such works exist already—but for the doctor. This need is adequately met by a volume which first appeared in the United States.[3] The author recommends a combination of diaphragmatic vaginal pessary, spermicidal ointment, and douche. The size of pessary most often fitted is of a diameter of 70 mm. In a total of 1014 cases, 790, or 78 per cent., were fitted with such pessaries, and 222, or 22 per cent., with cervical pessaries which were used in cases of retroversion and cystocele. The average length of time during which the appliance was used was between one and two years—a somewhat short period for a satisfactory evaluation. Out of a total of 740 women advised by her, Dr. Konikow kept in touch with, and had reports of, 397, and lost touch with 343. Among the 397 women with whom she

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[2] The Practice of Contraception. Edited by Margaret Sanger and Hannah M. Stone. Baltimore, U.S.A.: Williams and Wilkins Company. Pp. 316. $4.

[3] Physician's Manual of Birth Control. By Antoinette F. Konikow, M.D. London: Baillière, Tindall and Cox. 1931. Pp. 245. 12*s*. 6*d*.

NOTES, COMMENTS, AND ABSTRACTS

BIRTH CONTROL STUDIES.

BIRTH control is a controversial subject on which feelings run high but it is highly desirable that medical men and women should be supplied with accurate information on all its aspects. This is the disarming introduction made by Sir Humphry Rolleston to the Fourth Annual Report of the International Medical Group for the Investigation of Contraception.[1]

Report of the International Medical Group.

The report was published under the auspices of the Birth Control Investigation Committee, which has since become a constituent part of the National Birth Control Association, and aims at being an impartial summary of information bearing on birth control as it becomes available in different countries. According to Dr. Hannah Stone, who supplies a survey of the position in America, a greater change in the temper of the people towards birth control has taken place in the space of the last two years than in the preceding decades. Continued attempts have been made to amend or repeal federal or national and State laws concerning birth control, but many believe that the question will eventually be solved by a nullification of the laws rather than by their change or repeal. An unsuccessful prosecution in 1929 in New York City established the fact in the words of the magistrate, that "If a doctor in good faith believes that the patient is a married woman, and that her health requires prevention of conception, it is no crime to so advise and instruct therein." The prosecution is said to have evoked a vast amount of discussion and helped to crystallise public opinion, not only locally but all over the country. To-day there are over 75 contraceptive services in the States, all under medical supervision. The method still most generally advised at these clinics is a vaginal diaphragm or cervical cap with a contraceptive jelly. For patients with relaxed perineum, cystocele, rectocele, and prolapse, the most inexpensive and simple device is held to be a rubber sponge cut to individual measurements, with the centre scooped out for the cervix. This device has certain disadvantages and improved methods for the application of contraceptive jellies alone are being tried out in these cases. In addition attempts to introduce an effervescent chemical contraceptive in tube form are recorded.

THE GRÄFENBERG RING.

With regard to the Gräfenberg intra-uterine ring no information is available from America, but experiences with it are described by Dr. J. H. Leunbach (Copenhagen), Dr. Helena Wright, and Dr. Norman Haire. Dr. Leunbach's report is not very encouraging. Out of 175 patients to whom silver rings were applied, in 49 cases the ring has had to be removed because of constant bleeding, pain, vaginal discharge, and tenderness; in 35 cases the rings were spontaneously expelled, in most cases several months after the introduction. Only nine of these women themselves noticed that the ring had come out; five women became pregnant because they wrongly believed that the ring was present, while in four additional cases pregnancy occurred although the rings were in the proper place. Less than 50 per cent. of the patients are entirely or even fairly satisfied with the ring after two years' observation, and in some of these menstruation has become somewhat irregular. Dr. Helena Wright reports on a much smaller series of patients, 36 in all (for contraceptive purposes) but her results are equally discouraging. In only nine cases have the rings been successfully retained. In the remainder the ring was ejected at various periods and seven pregnancies resulted. Her conclusion is that the great disadvantage of the method is the uncertainty of the retention of the ring by the fundus, and owing to the extreme irregularity of its behaviour from patient to patient there is no clue as is what is likely to happen in any one case. Dr. Norman Haire reaches much less pessimistic conclusions. With an experience of over 400 cases (the longest period of observation being two years and a quarter) he is convinced of its value in "suitable" cases (undefined), as long as the method is applied only by the gynæcologist. He admits that he has found the ring alone not to be a certain preventive of conception and that in a certain number of cases the ring is expressed by the uterus, but adds that if another ring of different size or different elasticity is chosen one can be found which will stay in. He reports very few cases in which ill-effects were incurred and his general impression of this method is therefore favourable; but as he supports his views with no statistical evidence the results cannot be critically appraised.

SUCCESSES AND FAILURES.

The information about other methods that has become available in Great Britain during the year is very ably summarised by Dr. C. P. Blacker, the editor of the report. He shows that out of a total of 6081 cases advised at eight clinics 5 per cent. resulted in failure—i.e., pregnancy ensued—while 8 per cent. found the method advised unacceptable and abandoned it. It must, however, be noted that these proportions are the *minimum;* they only relate to cases with which the clinics maintained contact without following them up. Mrs. Margaret Lloyd, of the North Kensington Clinic, shows that of 460 "followed-up" cases about 9 per cent. found the method to fail and nearly two-thirds found it unacceptable—i.e., the results are considerably worse amongst the followed-up patients. More or less similar figures are reported from the Cambridge clinic, which instituted a follow-up inquiry, and here a comparison of the figures has led to the conclusion that both as regards proportion of failures and of acceptability the sheath is more satisfactory than the rubber pessary.

Some of the most interesting figures relate to the number of pregnancies that take place after the methods have been abandoned. It is often assumed, consciously or unconsciously, that without prevention 100 per cent. of pregnancies would ensue, and the proportion of successes, for lack of a control group, is really measured on that assumption. If in actual fact a large number of women would not become pregnant without prevention the proportion of successes is obviously overstated. The statistics reported show that actually only half the women who gave up the method advised, subsequently became pregnant, though it must be admitted that no indication is given as to how long they have been "exposed to risk," and information is required on that point.

Blacker includes in this summary an account of J. R. Baker's further studies on chemical spermicides, while Dr. Hertha Riese contributes a study of abortion and suicide in Germany, the thesis being that the practice of abortion is so widespread (an estimate of one million a year is given) that the use of contraceptive methods should be widely extended.

The report is generally a very useful summary of recent information on birth control, although it inevitably leaves the reader with the feeling that both the methods applied and the means of measuring their success or failure remain extremely inexact.

Last Week's Conference.

A conference, organised by the National Birth Control Association, was held in London from May 20th to 22nd at the Caxton Hall. The object of this conference was to place before medical officers of health, representatives of local authorities, and other interested persons who might wish to create facilities for giving advice on birth control in accord-

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[1] 1931. Obtainable from hon. sec., 26, Eccleston-street, London, S.W.1. Pp. 76. 2s.

ADDRESSES AND ORIGINAL ARTICLES

DYSPHAGIA.*

WALTER HOWARTH, M.B. CAMB., F.R.C.S. ENG.,
RGEON TO THE EAR, NOSE, AND THROAT DEPARTMENT, ST. THOMAS'S HOSPITAL; PRESIDENT OF THE LARYNGOLOGICAL SECTION, ROYAL SOCIETY OF MEDICINE.

IFFICULTY in swallowing may occur at any ment after the food (solid or liquid) leaves the uth on its passage past the fauces, through the irynx, down the œsophagus, and into the stomach. ien we consider the normal act of deglutition find that the bolus of food is, by the action of tongue musculature, propelled towards the k of the pharynx. As the contraction of the iohyoglossus and other muscles perform this act, larynx is drawn forcibly upwards by the action these muscles and some of the infrahyoid muscu- ure. This action depends on the integrity of thyrohyoid ligament. This drawing-up of the ynx and the infolding of the arytenoids prevents food entering or even touching the larynx, and enables the bolus of food to reach the deep pharynx. is, which is normally closed, opens to receive it, l the sphincter at the beginning of the œsophagus n relaxes. The food and liquid drops straight wnwards, unless the bolus of food is a fairly big e, in which case it goes down by the peristaltic tion of the gullet wall. The first act is voluntary t may be reflex as in a decerebrate animal allowing is elicited when water or dilute alcohol placed in the mouth: the next two are reflex d are dependent on the peristaltic action of the ophagus; that is to say, on regular waves of ntraction preceded by a wave of relaxation. This ocess continues until the stomach is reached as ere is no true sphincter at the cardiac end of the llet. It will be appreciated that with such a ng passage from the mouth to the stomach, and ith so many structures involved on the way, the portunities for some interference with the normal nditions that may cause difficulty in swallowing e very great.

I do not propose to go into all the causes of sphagia, for that would make rather a tedious talogue and would serve no useful purpose. For is reason I shall say nothing about acute inflam- atory affections of the mouth, fauces, and pharynx, nce everyone is familiar for example with the tense pain and difficulty in swallowing that accom- anies a quinsy and knows what measures are most kely to relieve it. It is the dysphagia of gradual nset that demands our attention, not only on ccount of the discomfort that the patient experiences nd which requires relief, but also as an index of ossible serious disease.

The Mouth and Pharynx.

When a patient complains of discomfort or difficulty n swallowing over any considerable period it is of the reatest importance that a very careful examination f the tongue, pharynx, and larynx be made in the irst instance. In some cases it will be found that ome chronic inflammatory process is the cause of he trouble, thus, for instance, a well-marked *chronic pharyngitis*, particularly the hypertrophic type with swollen lateral bands that is produced by post-nasal discharge, often gives rise to considerable dysphagia. This is not only on account of the inflamed mucosa being sensitive to the stimulus of the food, but also on account of some underlying myositis which may interfere to some extent with proper coördination of the muscular action. Various forms of *ulceration* at the back of the tongue, on the faucial pillars, or in the pharynx may be responsible, and in this connexion I should like to mention *Vincent's angina, syphilis,* and *malignant disease.*

Vincent's angina is much commoner than is usually supposed and causes ulceration of the fauces and back of the tongue which render swallowing difficult, whilst the ulceration due to a breaking down gumma or to a carcinoma often appears far back at the base of the tongue and may escape observation unless a laryngeal mirror is used. Either may, however, involve the pharyngeal wall and impede swallowing very considerably.

There are two other conditions in this region to which I should like to draw attention—namely, *pharyngeal paralysis* and *retropharyngeal abscess.*

PHARYNGEAL PARALYSIS.

Pharyngeal paralysis, especially when slight, is very apt to be overlooked, but it is of great importance that it should be borne in mind, for not only may it account for the dysphagia, but it may also be the first indication of serious disease of the central nervous system. The last four cranial nerves are concerned in the mechanism of speech and swallowing, between which there is a certain interdependence, the act of one inhibiting the act of the other. The nuclei of these nerves are scattered through the medulla, which contains the centre for the deglutition reflex. Degeneration of nuclei within the bulb occurs in the bulbar type of syringomyelia, and dysphagia may be the very earliest symptom of this disease. Other bulbar lesions may also have dysphagia as one of their early symptoms.

The recognition of pharyngeal paralysis is not always easy, but if the posterior wall of the pharynx is carefully inspected and the patient asked to swallow, one side of the pharynx will be seen to move across to the other side, rather like a shutter, the paralysed side being pulled over to the healthy side. When pharyngeal paralysis is observed a laryngoscopic examination may reveal a paralysis of the cord, and the diagnosis of a bulbar lesion be thus confirmed.

In bulbar palsy dysphagia may be an early symptom, not only because of weakness of the pharyngeal muscles during the second stage of swallowing, but also because of loss of power in the tongue so that the food is passed back into the pharynx with difficulty. Myasthenia gravis may give rise to dysphagia and in this case a careful look-out for associated symptoms will probably make the diagnosis certain. It is extraordinary for how long some of these cases go on without getting markedly worse.

I have still under observation a man, after 12 years, whose first symptom was dysphagia associated with hoarseness due to a paralysed vocal cord in whom, after a year or two, an atrophy of half of the tongue supervened. For many years his condition has been stationary and he is still at work, and the bulbar lesion does not appear to have progressed.

The paralysis of the pharyngeal muscles following diphtheria is, of course, well known, and dysphagia following an attack of diphtheria would naturally receive appropriate consideration.

RETROPHARYNGEAL ABSCESS.

Retropharyngeal abscess is usually seen in children as an acute process, but at times it develops in adults kept in touch, there were 18 failures or cases of unwanted pregnancy—12 unaccountable, and six due to an omission of some part of the technique. This figure compares somewhat favourably with the corresponding figure of 5 per cent. of failures for British birth control clinics.

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* Read at a meeting of the East Sussex Medico-Chirurgical Society on March 10th, 1932.

The book is clearly written and is well illustrated by diagrams and drawings. It is probable, however, that the author under-estimates the value of the sheath as a contraceptive method. She states that her practice shows a high percentage of failures with the use of this method, but she does not specify, in an otherwise full statistical supplement, what this percentage is.

THE DOCTOR AS TEACHER.

AT a meeting of the London Jewish Hospital Medical Society on May 12th, Dr. L. Phillips read a paper in which the doctor was considered as a factor in the movement for public enlightenment. Such activity was almost entirely a modern development. Bacteriology had made manifest the importance of cleanliness in health, a simple measure which could be made effective in every home. Tuberculosis, cancer, and venereal disease were instances of diseases being countered by public campaigns of enlightenment, led and inspired by doctors, as were also the "open-air," "sunlight," and "dress-reform" movements. Maternity and infant welfare centres and school inspection afforded means of direct instruction; and the public lecture, the press, the screen, and the wireless were being more and more extensively utilised. Courses of instruction in health matters were now regularly arranged by many organisations. These activities revealed a change in the mutual relationship of doctor and community. The former was ceasing to regard himself merely as a professional healer of individual ills, plying an exclusive craft; the latter was ceasing to invest the doctor with a priestly halo of mysterious omnipotence. Avowing himself a man of science with frankly confessed limitations, and dispersing the mist of superstition and ignorance which still enveloped popular knowledge of health and disease, the doctor was being less exposed to condemnation and was rising in public esteem. A lessening demand for the inessential was putting efficiency before the bedside manner, and the realisation that the team was the true unit of modern medical practice was contending with the desire for the traditional "personal touch." By satisfying the general desire for enlightenment in health and disease the doctor was exercising a powerful influence in the direction of human progress.

DERMATOLOGY AS AN OUTPOST OF MEDICINE.

IN the fifth Malcolm Morris memorial lecture, delivered last Monday at the Royal Society of Arts, Sir Ernest Graham-Little showed how the position of dermatology in relationship to general medicine had changed out of all recognition within our own generation. He congratulated himself on having been trained in the French school of dermatology at a time when that school was largely overshadowed by its great German rival.

The Austro-German school, founded by Hebra, which reigned through the latter part of last century, attached far more importance to external than to internal causations of skin diseases, but the contemporary French school anticipated modern theories in the importance which it ascribed to general systemic causes. Louis Brocq, in his classical work published in 1907, divided these diseases into two main groups: those which he called "true morbid entities"—i.e., specific diseases of the skin, with an ætiology chiefly external, and a larger group of diseases of the skin which he claimed should be regarded as "cutaneous reactions" to more general causes. This highly philosophic conception became fruitful of new and important modern discoveries, centred round the phenomenon known as "allergy."

The physiological functions of the skin had, Sir Ernest said, become much more understood and had assumed far greater importance within the last few years. It was too often forgotten that the skin was in many senses the largest organ of the body, acting as a protecting medium between the body as a whole and its environment. Physical health was largely a matter of regulating the influences affecting the surface of the body and its movements. It was not therefore surprising that the French conception of skin diseases, as being in the large majority of cases a "cutaneous reaction to general conditions," had in recent years received so great an impetus. The natural corollary of such conceptions was that dermatological eruptions had often become pointers for the recognition of systemic disorders, of which they were indeed only one manifestation. In conclusion Sir Ernest spoke of an endeavour some years ago to persuade the Senate of London University to allow the M.D. examination to be taken in dermatological medicine, thus bringing it into line with other special branches of medicine and surgery in which this is allowed. A member of the Senate then argued that the "cuticle," as he called it, could not compare in importance with the organs of the body in which specialisms were recognised. Yet the skin was, in fact, one of the most important of our means of defence against disease, and its disorders one of the most valuable indications of general illness. The study of dermatology was of essential importance to the medical student, and should be a compulsory item of the curriculum.

JOHN HEAVISIDE.[1]

WHO was John Heaviside? In chronicles of the beginning of the nineteenth century, or thereabouts, his name not seldom occurs, and as he was an interesting person, Dr. G. C. Peachey has done well to compile a little account of his life. A pupil of the famous Percivall Pott, of St. Bartholomew's Hospital, he failed to secure election to the staff of this institution, in spite of his important patronage, for the post which he contested with Abernethy fell to his distinguished rival. None the less, Heaviside attained to a great professional and social position, and it was his fashionable status that led him to be associated with the notorious duel between Colonel Montgomerie and Captain Macnamara, when Montgomerie was shot through the heart, and Macnamara was arrested for murder. Heaviside was the doctor in attendance, and was later taken into custody as an accessory to the crime. Heaviside defended himself successfully, and evidence was given in his favour by the great Nelson among other distinguished persons. Dr. Peachey quotes the following lines from *Nugæ Canoræ*, which indicates the notoriety of the circumstances:—

> This Surgeon so great,
> Was up early and late,
> To tend accidents bloody and cruel;
> Tie artery or vein,
> Or extract from the brain
> A chance bullet, when shot in a duel.

As far as Heaviside was concerned the jury brought in a verdict of "not guilty," their view clearly being that if duelling continued to go on, a doctor had better be in attendance to mitigate the evil. Heaviside made an extraordinary collection of curiosities, and monsters, pathological preparations, casts of faces, and of miscellanea, often rubbish, but including books, manuscripts, paintings, and drawings. He became surgeon-extraordinary to George III., and was elected to the Royal Society on influential medical backing.

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[1] John Heaviside, Surgeon. London: St. Martin's Press. Pp. 50.

BOVEY TRACEY AND DISTRICT HOSPITAL.—This new hospital, which has cost £3300, all of which has been raised, was opened last week by Mrs. Trelawny. The building comprises four wards, a theatre, and quarters for the matron and staff.

hat spasm may occur at the entrance to the gullet s well as at its lower end, and the train of symptoms hat is met with is usually a very definite one.

Spasm of the Œsophagus.

Spasm at the Upper End.—The patients are almost lways middle-aged women and the outstanding ymptom is difficulty in swallowing which is located t the level of the larynx. The diet is gradually educed until milk, fluids, and eggs are the staple are. Choking fits occur and are dreaded so much that reat care is taken in eating and an hour may be aken in eating an egg and a thin slice of bread and utter. The food taken is insufficient and the patients ecome emaciated. About a third of them are anæmic.

It is found that most of these patients have superficial glossitis and cracking of the corners of the mouth and that these changes may extend to the upper end of the gullet. The association of spasm of the pharyngo-œsophageal sphincter with glossitis, anæmia, and enlargement of the spleen has been recognised for some time in this country and recently a series of cases has been reported in America and the association of symptoms has there been given the name of the Plummer-Vinson syndrome. A cure can usually be effected by the administration of iron and arsenic and the passage of the œsophagoscope to stretch the crico-pharyngeus sphincter.

Spasm at the Lower End.—For many years opinions have differed, often violently, as to whether the spasm and consequent hold-up that occurs at the lower end of the gullet is a true spasm or not. Certainly the structures involved differ very markedly. In pharyngo-œsophageal spasm the muscle involved is striated and strong, whereas at the lower end it is unstriated and yielding, as there is no true sphincter at the cardiac end of the œsophagus. Whether cardiospasm is a correct term or whether we should more properly call it achalasia of the cardia (which means want of relaxation) need not be discussed on this occasion. We are content to recognise the clinical entity. The onset of the disease is invidious and may extend over months or years. The usual complaints are occasional difficulty in swallowing, and, after meals, a sensation of weight in the epigastrium which is relieved by drinking or by regurgitation of the food. The discomfort is often only temporary and is thought to be due to gastric disturbance. At a later stage there is dysphagia and regurgitation of food at every meal, liquids often presenting the most difficulty. Careful inquiry as to the dysphagia will elicit the fact that it is usually referred to the lower end (though occasionally the cricoid may be mentioned), that it is intermittent and varies in degree, normal meals often being taken after one slight hold-up has been overcome, whilst at other times nothing whatever can be swallowed. Regurgitation, the other main symptom, is often wrongly referred to as vomiting. It may occur at every meal or only intermittently. Often regurgitation is immediate and the patient retains no food. Occasionally the regurgitation is excited by the patient himself in order to get rid of the saliva and food that has collected in the gullet; swallowing is then easier. Pain at the cardia and excessive salivation are other symptoms that are complained of.

Examination of the patient at the X ray screen shows a typical picture. The barium meal drops straight to the cardia and is held up there, the dilated œsophagus then fills up and presents a sausage-shaped outline. No fluid may trickle through into the stomach for minutes or hours. Then the cardia relaxes and all the meal goes through quickly.

Œsophagoscopic examination shows an enormously dilated œsophagus, often containing pints of cloudy grey fluid containing soft masses of food. There may be sagging of the dilated gullet so that the gullet seems lengthened and the mucosa is often thrown into folds. The contact of the tube often causes the cardia to shut firmly, but under gentle pressure it usually relaxes and the stomach is entered.

The diagnosis of this affection from malignant disease should not be difficult if attention is paid to the history and careful radiographic and œsophagoscopic examinations are made. Treatment is a matter of great difficulty and the best results are often obtained by forcible stretching of the cardia with mercury filled tubes or dilating bags. The use of belladonna or papaverine is often helpful. Endocrine therapy has improved some patients, but there is a great tendency to relapse and these cases are among the most difficult with which we have to deal.

Organic Causes of Œsophageal Dysphagia.

When we consider organic conditions we have, in the first place, abnormalities of the gullet. I shall mention only one and that is congenital stricture.

CONGENITAL STRICTURE.

This is by no means uncommon, especially that variety in which the lumen is only partially occluded by the web. Sometimes it may go unrecognised for many years.

Some years ago I saw a boy of 4 years of age who had never been able to swallow food properly and who was very emaciated and undersized. On examination of his œsophagus I found a web in the middle third, and the lumen through this was about the size of a large knitting needle. After careful dilatation of the stricture with graduated bougies the lumen was increased in size, so that ordinary food could be swallowed. The boy gained weight rapidly and soon became a normal child. He has been kept under observation for many years, and the œsophagoscope passed occasionally, further dilatation being carried out about every two years.

It is of the greatest importance that the dilatation should be very gradual. If any attempt is made to hurry matters a fatality is certain to occur, as the gullet wall is extraordinarily thin, and overstretching of the stenosis may easily cause a linear tear with subsequent mediastinitis. I have had one case of this nature in which dilatation had been carried out for many years and then, whilst an attempt was being made to enlarge the lumen too rapidly, the gullet wall was split. If the utmost care is used there should be little or no risk of mortality, and the lumen can be enlarged so that any well-masticated food can be swallowed. Congenital stenosis, if not an absolute atresia, yields more readily to œsophagoscopic bouginage than does cicatricial stenosis.

CICATRICIAL STENOSIS.

Cicatricial stenosis or fibrous stricture is met with rarely in this country in comparison with such countries as America or Germany. The reason for this is that in the countries mentioned proprietary washing and cleaning powders containing caustic alkalis are very largely used, and are sold in packets at every grocers without any poison label or even any indication of the contents of the package, so that it is no uncommon thing for utensils which have been used to measure or dissolve the powders to be afterwards used for drinking without rinsing, and thus the residue of the powder remaining is swallowed in strong solution. The accidental swallowing of caustic alkalis is thus a very frequent cause of cicatricial stenosis. In this country household and gives rise to marked difficulty in swallowing. Unless the occurrence in its chronic form is appreciated its presence may well be overlooked. Recently I have had two cases that illustrate this point.

The first was a lady who had marked dysphagia over a period of several months and in whose pharynx I found a soft fluctuating swelling which on examination with the laryngeal mirror was seen to extend as low as the arytenoid. When this was opened and the abscess drained the dysphagia disappeared. The origin of this abscess was obscure but in all probability was due to tuberculous infection of the retropharyngeal gland of Henle.

The other case was a man with a congested beefy-looking pharynx which on closer examination was seen to be fuller on the left side. Examination with the mirror showed a larger swelling on the lateral wall of the pharynx quite low down. Incision produced a quantity of pus and relieved the dysphagia. As the Wassermann reaction was positive it is probable that it was of syphilitic origin.

As these abscesses of retropharyngeal origin tend to track downwards and point in the hypopharynx, they may often be overlooked. If no definite local cause in the region of the pharynx is seen we may have to do with the so-called functional dysphagia. This usually occurs in young females and may be one of the first symptoms of hysteria. It takes two forms —a paralytic and a spasmodic. There is either a difficulty in moving the bolus of food from the mouth into the pharynx (the first stage of deglutition) or else it cannot be passed from the pharynx into the gullet (second stage) and is, as a rule, rejected. Once the food gets into the gullet it passes downwards all right. The complaint of "a lump rising in the throat" or "a ball coming up to meet the food" is a common one.

The diagnosis of functional dysphagia, frequent though is its occurrence, should not be made until all possible organic causes are excluded.

The Larynx.

We now come to the region of the larynx and a consideration of the conditions in this neighbourhood which may give rise to difficulty in swallowing. Apart from the inflammatory affections, it may be said that they are usually of a serious nature. Examination with a laryngoscopic mirror may reveal abnormal conditions in the epilaryngeal region or in the sinus pyriformis. A swollen and infiltrated epiglottis and arytenoids may be due to tuberculous disease, a deep crater-like ulcer due to a breaking-down gumma, or to malignant disease. Dysphagia in such cases may be severe and may often be accompanied by pain which radiates to the ears. The difficulty in swallowing is often an early symptom as any process which causes swelling of the structures at the entrance to the larynx will prevent this from being drawn upwards into the base of the tongue, and the food or fluid will touch the swollen epiglottis or arytenoid, and dysphagia thus occurs owing to undue spasmodic contraction of the pharyngeal musculature. Often fluids present more difficulty than semi-solids or solids.

The Œsophagus.

The gullet begins at the lower border of the cricoid cartilage and is guarded by a sphincter which normally relaxes during the third stage of deglutition. Inspection of this region is beyond the range of mirrors and we have to rely on other methods of examination in order to find out what is the nature of the obstructions that occur. That this examination is important is clear when it is realised that in the œsophagus alone there are to be found at least 30 causes for dysphagia. I need hardly say that I do not propose to deal with all of these, but shall select a few that seem to me to be of importance. When, after exclusion of all possible lesions higher up, it is thought that the cause is an œsophageal one, what are the methods of examination that are at our disposal? They are mainly two: examination by X rays before the fluoroscopic screen and direct œsophagoscopy with suitable tubes. The time has long passed when examination by the blind passage of bougies was justifiable and all examinations of the gullet should be conducted under direct vision.

RADIOSCOPY.

With regard to the X ray examination, it is important that this should be conducted by the surgeon and the passage of the opaque fluid be actually observed. Only by this means can a proper idea be obtained of the behaviour of the various portions of the gullet. Hesitation at the orifice, a slowing at the aortic level, or a complete hold up at the cardia with subsequent filling of the œsophagus above it may all be seen, whilst the passage of the fluid through a stricture, the irregularity or otherwise of the stream, may all throw light on the nature of the obstruction that a single photograph, however skilfully taken, might fail to elucidate. This examination is conducted with the patient upright before the screen and in the lateral position. An examination in the anterior position should, however, never be omitted for by this means one can get an idea of the thoracic organs (heart, lungs, aorta, &c.) and eliminate external pressure on the œsophagus as a cause of stenosis.

ŒSOPHAGOSCOPY.

After the radiographic investigation the patient should be examined with the œsophagoscope. This may be carried out under either local or general anæsthesia. If local anæsthesia is preferred it is well to give the patient an injection of morphine and scopolamine and then to use a 20 per cent. solution of cocaine for the local application. The most effective way of producing the required anæsthesia is to pass the forceps or swab-holder containing the gauze or wool which has been soaked in this solution behind the posterior faucial pillar and then carry it downwards until the pyriform fossa is reached. The superior laryngeal nerve runs across the floor of the sinus, and if the wool is kept in contact with it for a few moments on three occasions at three minute intervals, the surgeon will then be able to pass the œsophagoscope into the gullet without any discomfort to the patient. The patient should be lying down on his back and the head should not be unduly extended. Many people prefer general anæsthesia and it is certainly preferable in many cases, particularly on the first occasion, for a larger tube can often be used and the lower part of the gullet investigated more thoroughly. I have found avertin, administered half an hour before the examination, of very great use, for practically no general anæsthetic is then required.

Are there any contra-indications to œsophagoscopy in the endeavour to locate the source of dysphagia? Naturally the presence of an aortic aneurysm is a definite bar, whilst if it is suspected that the dysphagia may be due to the swallowing of corrosive or caustic fluids, œsophagoscopy should be withheld until sloughing has ceased and the inflammation has subsided. The extremes of age are not a contra-indication.

I should now like to present a few of the œsophageal conditions that may be met with and give rise to dysphagia, but before passing to the various organic conditions which may give rise to dysphagia it will, I think, be advisable to consider spasmodic stenosis of the œsophagus. It is now recognised ue to reflex vagus irritation, whilst hiccup is somemes complained of, particularly when the growth low down. In a large number of cases the degree f dysphagia is not at all severe and often amounts o no more than a vague sense of something being not ust quite right with the swallowing function. If his is associated with occasional choking or coughing, articularly with fluids, and if the subject is elderly, so much time should not be lost in trying palliative measures.

It should be remembered that marked dysphagia, regurgitation, emaciation, and cachexia are terminal ymptoms when the disease has progressed beyond all possibility of cure, and that careful investigation should be made long before such symptoms arise. X ray examination before a fluoroscopic screen may show a hold-up in any of the situations mentioned previously. The hold-up is not absolute but the bismuth will be seen to trickle slowly through the stricture, which often presents an irregular outline. There may, however, be a considerable mass of bismuth held up above the stricture. This may be due to spasm of the gullet wall. If the growth is at the diaphragmatic level, again the growth will probably be seen to be tortuous and a trickle of bismuth to go continuously into the stomach. Sometimes a high stomach growth, that is to say, one involving the abdominal œsophagus just below the diaphragm, may cause a curious appearance, part of the bismuth being held up above the diaphragm and part below.

Œsophagoscopic examination is, of course, essential if an accurate diagnosis is to be made, not only with regard to the nature of the growth but also with regard to its exact situation and extent. It is very unfortunate that in the large majority of cases one does not see the condition in an early enough stage for operative measures to be effective. Occasionally, however, quite early growths are met with. These may be seen on the wall of the gullet with little or no infiltration of it. If such a growth were to appear high up the possibility of excising the growth by incision and exposure in the neck would of course arise. Usually, however, the growth extends a little further down than one expects and, in addition, this part of the œsophagus is not very easy to mobilise. The only place in the thoracic œsophagus where excision is at all possible is about two inches above the diaphragm, and growths seldom appear in this situation.

NON-OPERATIVE TREATMENT.

With regard to other forms of treatment, these consist in the application of radium, removal by diathermy, deep X ray therapy, or the palliative use of intubation tubes.

Not much real success has been achieved by the use of *radium*, though many cases have been treated, and I myself have used it since 1912. The methods of application and the operative technique connected with them have altered and improved considerably, but the results remain frankly disappointing. The radium may be applied as the element in suitable containers, or wrapped round some form of intubation tube so that swallowing may be carried out with the radium in position. Another method is to implant radon seeds into the wall of the œsophagus above the growth and into the growth itself. A third method is to expose the gullet by lateral thoracotomy after having collapsed the lung two days previously. I have done several cases by this method, which not only gives a very good exposure of the lower part of the gullet but also serves to show how hopeless intra-œsophageal attempts at medication may be. When one has exposed the gullet and put one's hand along it, one finds that what seems with the œsophagoscope to be a very small growth is in reality a tumour the size of one's fist stuck on to the aorta and immovably fixed to the root of the lung, so that it is impossible to mobilise it and still less to implant radon seeds completely round it. On several occasions I have obtained considerable temporary relief by merely implanting the radon seeds in the more accessible portions of the growth, as well as using them internally at the same time. It is extraordinary how little discomfort the external thoracotomy gives the patient, and a few days suffice for the lung to expand again.

Deep X ray therapy has not as yet had much of a trial in this country, as there are so few efficient apparatuses in existence here as yet, but it should, I think, give satisfactory temporary results in selected cases.

Intubation.—A large majority of the cases that one sees, particularly those in hospital practice, are so advanced that little remains to be done except to make them comfortable and improve the swallowing for the time being. This is best effected by the use of flexible metal tubes such as Souttar's tube. Any growth that will admit the finest bougie can be dilated sufficiently to take a fairly large tube, and this can remain in position indefinitely. Meanwhile the patient is able to swallow semi-solids and fluids through it with comfort. I have had one patient who wore the tube for 18 months before the growth extended through the mediastinum into the lungs and eventually eroded the aorta. At the post-mortem the metal tube was found still in position in the lumen of the gullet and functioned to the end.

The most distressing feature of carcinoma of the œsophagus, particularly in its terminal stages, is the excessive salivation, and if the stricture is impermeable the constant expectoration every few minutes, both day and night, renders the existence of the patient one of abject misery. A gastrostomy does nothing to relieve this, so that if an intubation tube, however small, can be placed in the middle of the growth and the saliva enabled to trickle through it the comfort of the patient is enormously increased.

Dysphagia due to Pressure on the Œsophagus.

A few words should be said about extra-œsophageal conditions which may press on the gullet and so cause dysphagia. Amongst those that may be mentioned are malignant disease of the thyroid, tuberculous glands, or malignant glands of the neck that may compress the tube in the cervical region. Aneurysm of the arch of the aorta, enlarged bronchial glands, and mediastinal new growths are the most common intrathoracic lesions. In all these cases associated pressure on the recurrent laryngeal nerve may make laryngeal paralysis coexistent and simplify the diagnosis. X ray examination will in most cases be very helpful, whilst in all except aneurysm of the aorta œsophagoscopy is essential.

OUT-PATIENTS' PAYMENTS AT GUY'S HOSPITAL.—Beginning on May 16th out-patients at Guy's Hospital are now being asked to pay a registration fee of 1*s.* on first attendance. Children under 16 will pay 6*d.*, and other charges are fixed as follows: drugs and dressings, 1*s.* per week; massage, 6*d.* per treatment (children 3*d.*); light department, 1*s.* per week; vaccine department, 1*s.*; X ray examination, 2*s.* 6*d.* No charge will, however, be made in hard cases. Last year there were 122,867 out-patients, who made 554,606 attendances. Guy's does not, of course, stand alone in making a small charge to out-patients who can afford to pay it.

ammonia, salts of tartar (potassium carbonate), washing-soda, mercuric chloride, and strong acids when swallowed may give rise to cicatricial œsophageal stenosis. It may also be caused by lesions resulting from syphilis, tuberculosis, typhoid fever, scarlet fever, or diphtheria. When due to the swallowing of corrosive fluids the strictures are often multiple.

It will be remembered that the lumen of the gullet is not uniform throughout its length and that there are three places where the lumen is narrowed: the first is at the entrance which is guarded by the cricopharyngeus, the second where the left bronchus and aortic arch cross it, and the third at the diaphragm. When fluids are swallowed they are apt to touch the gullet wall at these points and consequently stenosis usually occurs at them. The crossing of the left bronchus is the commonest site.

When the stricture has been located dilatation must be attempted. Blind methods of dilatation with the bougie are almost certain to result in death from perforation of the gullet wall, but under œsophagoscopic bouginage the prognosis is favourable as to ultimate cure, the duration of the treatment varying with the number of strictures, the tightness and the extent of the tissue changes in the œsophageal wall. Of recent years attempts have been made to improve the methods of progressive dilatation. One of the newer ways is first of all to perform a gastrostomy and then give the patient a silk thread to swallow. This is eventually brought out through the gastrostomy wound; successive bundles of silk threads are pulled through the gastrostomy opening into the stricture. When the stricture is sufficiently dilated the gastrostomy is allowed to close. Another ingenious method is to have graduated metal olives threaded on the silk in groups of three quite close together in an endless chain which passes through the mouth, down the gullet, through the gastrostomy opening and into the mouth again. The olives, as they pass the stricture, fall into the stomach and are then drawn out through the gastrostomy wound, cleansed, and replaced in the mouth. Treatment may have to go on for months or a year, but the results are most satisfactory.

DIVERTICULA.

The next condition to which I wish to draw your attention is diverticulum of the œsophagus or œsophageal pouch. These occur at the upper end and are really pharyngeal in origin, but the symptoms are mainly œsophageal. The pouch is simply a hernia of the mucosa between the circular and oblique fibres of the inferior constrictor in the region of the lower border of the cricoid. Probably some congenital anatomical factor is responsible for the weakness of the muscle wall in this situation in these cases. Dysphagia is the first symptom and this is followed by regurgitation of the food, or rather that portion that has passed into the pouch. In more advanced cases pressure sensation in the neck and even local swelling when the pouch is filled is felt. This may sometimes be emptied under pressure. Tracheal compression may produce dyspnœa, whilst overflow from the pouch during sleep may give rise to a reflex paroxysmal cough. The X ray appearances when bismuth is swallowed is most characteristic, whilst œsophagoscopic examination will reveal the mouth of the pouch and, lower down, a slit-like entrance into the true œsophagus.

Treatment consists in the exposure of the pouch by incision through the neck and the suturing of its fundus upwards against the pharynx. After adhesions have formed round the neck of the sac and walled off the mediastinum, the pouch may be cut off and the wall invaginated and sutured.

ULCERATION.

Apart from the traumatic form due to the swallowing of foreign bodies or corrosive fluids, ulceration of the gullet is uncommon but may occur in syphilis or tuberculosis. I should like, however, to draw attention to peptic ulcer of the gullet as a cause of dysphagia. These ulcers, which are not as uncommon as is often supposed, occur in the lower part of the œsophagus, and, besides the dysphagia, they may give rise to severe pain in the back with vomiting of blood. Cases have been recorded in which such an ulcer has perforated into the pleural cavity with fatal results. Œsophagoscopy can alone differentiate these ulcers from malignant ones. Treatment consists in the application of silver nitrate to the ulcer and the free use of alkalis. Gramme doses of bismuth subnitrate are said to have a local antiseptic action.

FOREIGN BODIES.

I do not propose to say more than a few words about foreign bodies, though these are not infrequently swallowed, and when they remain lodged in the œsophagus, dysphagia is the most frequent complaint. In the large majority of cases there is a definite history of a foreign body and the diagnosis is not in doubt. The question will always arise as to whether the foreign body is still impacted or whether it has passed on and left some damage to the wall of the pharynx or gullet that may be responsible for the symptoms of dysphagia. In a great many cases X ray examination will be helpful, especially when the metallic bodies are concerned, but a good many objects, particularly fish bones, meat bones, and so forth are non-opaque to X rays. My rule is to wait on events, and if the discomfort persists or increases after two days to advise œsophagoscopy. It is far better to be on the safe side, and that one's examination should be negative, rather than miss some fragment of bone that is impacted in the wall of the gullet and which might give rise later to perforation, with resulting erosion of a vessel or mediastinal abscess. I regard meat or game bones as the most dangerous type of foreign body. It is a mistake to try to force a foreign body into the stomach with a bougie, for on more than one occasion the gullet wall has been ruptured by this method with fatal results. Blind instrumentation, in view of the safety and success of œsophagoscopy, is, I think, always reprehensible.

Malignant Disease of the Œsophagus.

We must now turn our attention to malignant disease, as this unfortunately provides the majority of cases of dysphagia that are met with. Carcinoma of the gullet is commonest at the lower end and rarest at the upper end, but it is, I think, that which occurs at the aortic level which is often most prominently before us, as the signs and associated symptoms often bring about its recognition at an earlier date, whilst carcinoma at the lower end may present almost no symptoms until it is almost in its terminal stages.

Dysphagia is the commonest symptom and very often the onset is sudden. Sometimes it may come on as a choking fit at meal-time, and often, when the growth is low down, the feeling of obstruction may be referred to the cricoid region, so that the patient's sensation with regard to the site of obstruction is by no means trustworthy. It is a common thing for pain to be referred to the lower end of the sternum. Sometimes an early symptom is paroxysmal cough

FIG I.

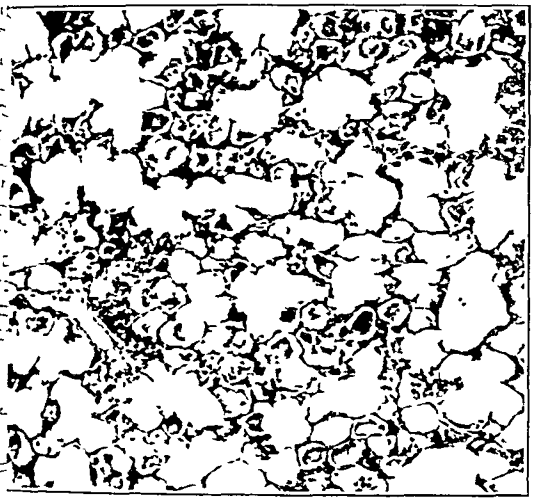


FIG. II.

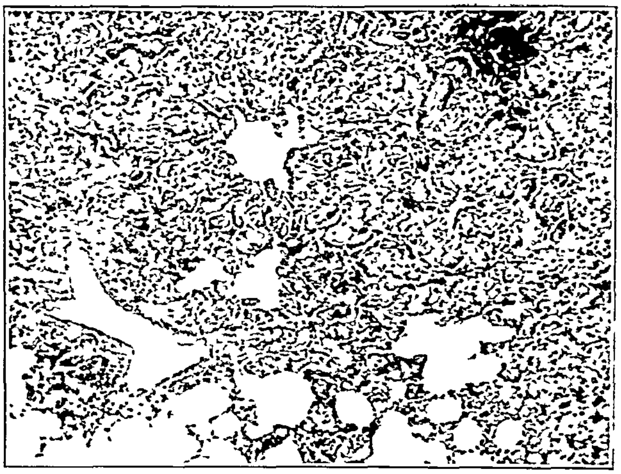


FIG III

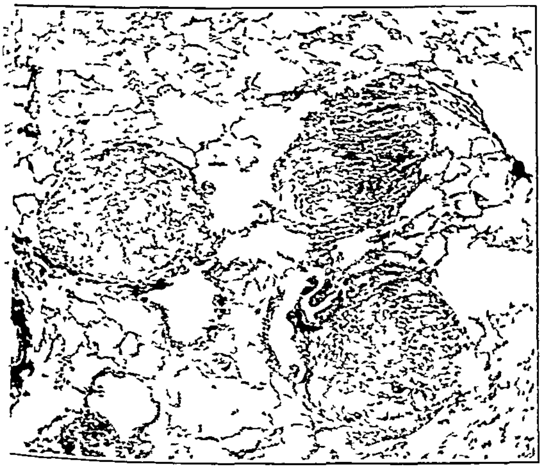


FIG. IV.

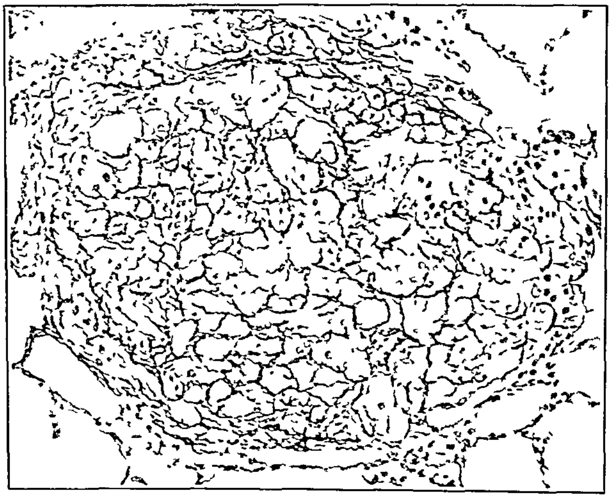


FIG V

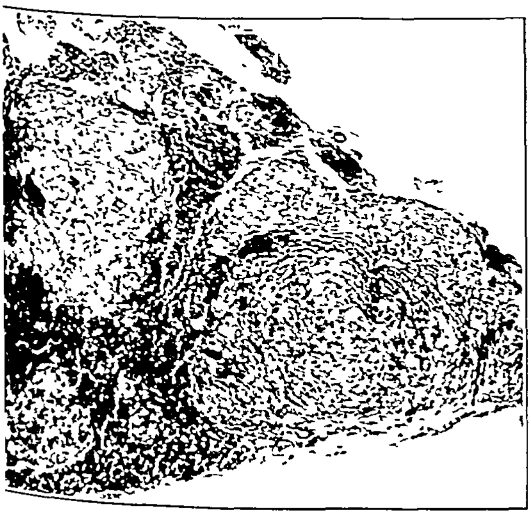
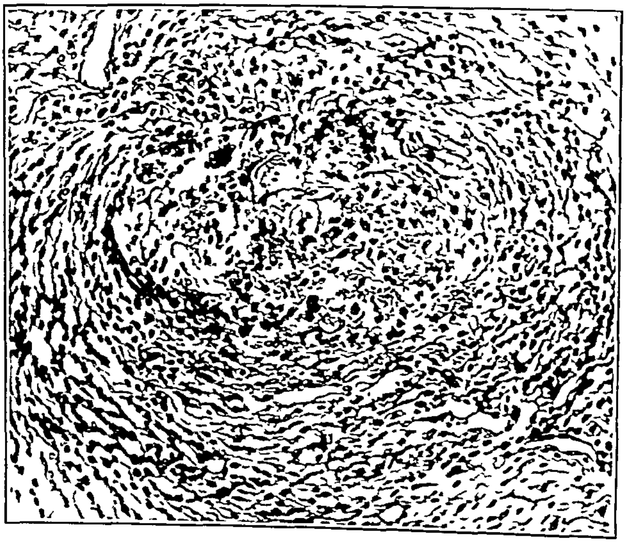


FIG VI



ROF. KETTLE AND DR. HILTON: THE TECHNIQUE OF EXPERIMENTAL PNEUMOCONIOSIS.

THE TECHNIQUE OF EXPERIMENTAL PNEUMOCONIOSIS.*

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(WITH ILLUSTRATIVE PLATE.)

A GREAT deal has been learnt about the pathology of silicosis from the study of human material, but there are still wide gaps in our knowledge. For example, even in simple uncomplicated silicosis it is not yet absolutely clear how the characteristic lesion is produced, nor can we claim exact knowledge of the way in which the tubercle bacillus reacts to the presence of silica in the lung. It is possible that these and other questions could be solved by observation alone, but many of the industrial pulmonary diseases present problems of such complexity that only by experiment are we likely to make progress in their comprehension and control. This has been recognised by all who have worked in this field, and experimental studies have been pursued in this country and abroad for many years.

Exposure to Dusty Atmospheres.

For the direct study of pulmonary lesions the method adopted by practically all experimenters is to expose animals for varying periods of time to dusty atmospheres produced either in boxes or in actual rooms, and this would seem the most obvious technique to employ, for it imitates the natural conditions to which industrial workers are subjected. Nevertheless it has several disadvantages, some so serious as to limit its practical value very considerably. It may be that the method is irreplaceable for the investigation of the earliest pulmonary reactions to particulate matter, the behaviour of phagocytes to different dusts, and so forth. But we are to-day vitally concerned with the production of actual dust lesions in the lungs of experimental animals, because before we can study how the action of silica in the lung may be modified by the presence of other dusts or by infection, we must be able to reproduce the pure silicotic lesion in our experimental animals, and the production of experimental silicosis is the necessary preliminary to the investigation of the toxicity of the other dusts which occur in industries. L. U. Gardner and his colleagues have produced recognisable silicotic lesions in the guinea-pig and the rabbit by the inhalation method, but they make it quite clear that results cannot be obtained unless the animals are dusted continuously for periods measurable in years rather than months, and herein lies the main difficulty of the method. By various mechanical devices it is possible to produce in a confined space an atmosphere containing the appropriate concentration of suspended particulate matter, and the maintenance of such an atmosphere for a period of years is merely a matter of organisation, though it must depend for its success on the coöperation of laboratory assistants who are more than usually reliable. The number of animals used in each experiment must be large to compensate for the wastage which is sure to occur. H. S. Willis[1] has noted the high mortality of dusted animals as compared with controls kept under ordinary laborato conditions. Of a batch of 75 guinea-pigs which were dusted for between two and three years, only 18 were alive at the end of this time. Here, again, the ca[illegible] and identification of a hundred or more animals for a period of years is merely a matter of organisation, and no doubt one experiment of this kind could be carried out without any great difficulty. But it would be impossible to conduct simultaneously a series of such experiments in any ordinary laboratory, and unless the further experimental investigation of these diseases is to be restricted to a few institutions unusually fortunate in regard to space, equipment, income, and personnel, some other technique must be adopted.

LEGENDS TO ILLUSTRATIONS ON PLATE.

PROF. KETTLE AND DR. HILTON.

FIG. I.—Lung of a guinea-pig killed 14 days after intratracheal injection of kaolin; macrophages and syncytial cells lying free in alveoli.

FIG. II.—Lung of a guinea-pig killed on the 330th day after intratracheal injection of a large dose of kaolin. The lung is practically solid with phagocytes containing kaolin crystals, but no reaction of the pulmonary tissues has yet occurred.

FIG. III.—Three nodular collections of phagocytes containing quartz crystals in the lung of a rabbit killed on the 385th day after intratracheal injection of quartz.

FIG. IV.—One of the nodules in Fig. III. under high magnification, showing early increase in collagen.

FIG. V.—Characteristic early silicotic nodules in tracheobronchial lymph gland of a rabbit killed on the 557th day of the experiment, having had three intratracheal injections of quartz.

FIG. VI.—A high magnification of part of Fig. V., showing the development of the laminated silicotic nodule in an early stage.

Direct Intratracheal Injection.

Some years ago one of us becoming dissatisfied with the dusting technique began to experiment with direct intratracheal injections. Unfortunately this work was interrupted but not before indications were obtained that the method had possibilities. It was found that rabbits and guinea-pigs tolerate the introduction of suspensions of particulate matter into the lung by way of the trachea surprisingly well. And the lungs of such animals killed at varying times after the inoculations showed microscopic pictures comparable with those found in animals to which similar dusts had been administered by inhalation. These experiments were cut short, and the animals were killed before pulmonary lesions had time to develop, but during the last three years we have gone further into the matter and have obtained results which are distinctly promising.

TECHNIQUE.

This communication is concerned with the technique we have elaborated. As our suspending fluid we use sterile normal saline solution and to this is added the appropriate quantity of the dust it is desired to introduce, the suspension being freshly prepared and autoclaved before use.

The animals are anæsthetised by urethane, the trachea is identified by palpation, and a nick is made in the skin over it. The trachea is then exposed by blunt dissection aided, if necessary, with a few snips with a pair of scissors, and the needle is thrust into it in a downward sloping direction. The animal is raised to a vertical position and the suspension is injected under gentle pressure. The introduction of the fluid, and even the mobilisation of the trachea, is often followed by one or two coughs, and there may be some regurgitation through the nose, but the greater part of the inoculum passes directly into the lungs. The needle is then withdrawn and the skin incision closed with a catgut suture. Beyond damping the skin with methylated spirit, more for the purpose of controlling the fur than for any other reason, no special precautions are taken against sepsis. We have not found it necessary to apply anything in the shape of a dressing, and we have never observed any local infection. It is possible, of course, to insert the inoculating needle directly into the rabbit's trachea through the uncut skin, and the same can be done, though with much less certainty, in the guinea-pig. But it is also easy to miss the trachea unless it is fully exposed, and since one of our main objects was to use as few animals as possible, we preferred to be quite certain that all our injections actually reached the lungs. We have found, however, that excessive manipulation of the tissues of the neck especially in guinea-pigs is likely to be followed by a heavy mortality in the early days of the experiment. The more rapidly and cleanly the inoculations are performed, the fewer are the immediate casualties, and in our later experiments we have lost relatively few animals—about 10 per cent.

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* The expenses of this work were defrayed by a grant from the Medical Research Council, and one of us (R. H.) has been in receipt of a personal grant.

LEGENDS TO ILLUSTRATIONS ON PLATE.

DRS. POYNTON AND LIGHTWOOD.

FIG. I.—Bone changes in acute lymphatic leukæmia. Note the periosteal "layering" of the humerus and erosion of the cortex near the lower end of the bone.

FIG. II.—Periosteal changes in the shaft of the femur.

FIG. III.—Periosteal "layering" in healing congenital syphilis. (Patient aged 10 months.)

FIG. IV.—Radiogram of tibia and fibula from case of scurvy in a child aged 10 months. Stage of organisation of the subperiosteal hæmorrhage.

DR. VILVANDRÉ.

FIG. I.—Extensive calcareous degeneration of the atheromatous abdominal aorta.

FIG. II.—Calcification of popliteal artery in a case of intermittent claudication. The tibial artery and the dorsalis pedis and its branches also showed extensive calcification.

FIG. III.—The left coronary artery and its branches injected with lipiodol.

FIG. IV.—Post-mortem radiogram of heart showing calcareous atheromatous degeneration of coronary (white patches).

In our early experiments we used dilute suspensions and injected relatively large doses, but recently we have used thicker suspensions, 3 or 4 per cent., and have injected only 1 to 2 c.cm., with apparently much better results. When using such thick suspensions there is always the danger of clogging the larger air passages, but this can be avoided by injecting a little air after the inoculum, thus blowing the fluid into the alveoli. With many dusts it is convenient to inject with an ordinary record syringe and needle, but some of the crystalline preparations tend to stick between the barrel of the syringe and the plunger, and with these it is more convenient to use a glass tube and a large rubber teat, connecting the tube to the needle by thin rubber tubing.

With this method it is easy to inoculate 20 to 30 animals in an hour with amounts of dust which compare very well with the quantities inhaled after many hours in the dusting chamber. If desired the inoculations can be repeated at, say, monthly intervals, and some of our animals have received three or four separate doses.

ADVANTAGES OF THE METHOD.

Once the animal has survived the inoculation it is subjected to no more risk than any member of the laboratory stock; its expectation of life is equally good, and, in fact, we have very few casualties among our animals after the first month of the experiment. The advantages of this method are self-evident; the necessity for the cumbersome dusting plant is avoided, and the laboratory staff is relieved from the supervision of the daily dusting of large numbers of animals over a period of years. The actual number of animals used can be reduced to a minimum. In an experiment involving 30 guinea-pigs, for example, one would expect to have at least 20 to 25 animals alive at the end of three months, and apart from accidents and laboratory epidemics there is no reason why any of these survivors should die except of old age. Again, there is no necessity for the large amounts of dust which the dusting chamber demands; quite small quantities are sufficient, in itself a matter of some importance, and the economy of the method makes it possible to carry out several different experiments simultaneously. We have at present a series of nine experiments in progress, each involving the use of separate dusts or combinations of dusts, and this would have been quite impossible if for each experiment a separate dusting chamber had been required. These advantages, however, fade into insignificance unless it can be shown that the method gives results which can stand comparison with those of the older technique. Our work has not been in progress sufficiently long for us to have produced anything like end-results. Silicosis is a chronic condition taking years to develop, and there is no known method by which the characteristic fibrosis can be accelerated. But so far as they go our results show that the method fulfils certain fundamental requirements.

1. The introduction of the dust suspension into the lungs in the quantities described causes no recognisable trauma of the pulmonary tissue, and there is no apparent difference between the reaction of the lung to dust introduced in this way and dust which is inhaled. Fig. I. is taken from a section of the lung of a guinea-pig killed 14 days after intratracheal injection of 3 c.cm. of a suspension of kaolin. (After removal from the body the lungs in this and the other experiments were distended and fixed with formal saline solution injected through the trachea.) The lung is in no way disorganised. Numerous macrophages and syncytial cells containing kaolin crystals are seen lying free and evenly distributed in the alveoli. The appearance corresponds with that seen in dusted lungs.

2. A very high dust saturation of the lung can be brought about though its distribution may be patchy. Fig. II. is taken from the lung of a guinea-pig killed on the 336th day after the intratracheal injection of a large dose of a concentrated suspension of kaolin. In the part illustrated the lung is practically solid, the alveoli being filled with phagocytes containing the large kaolin crystals. There is as yet no reaction of the actual pulmonary tissues.

3. Dust introduced into the lungs by this method produces lesions which appear to be quite characteristic.

Our earlier results were rather disappointing, since we failed to produce lesions in what we hoped would have proved sufficient time for dusts to have caused fibrosis.[3] But it appears that however the silica reaches the lung, whether as a single massive dose or in repeated inhalations, time is an essential factor in the reaction. Our later results are much more promising, for example:—

Fig. III. is from the lung of a rabbit killed 385 days after intratracheal injection of 5 c.cm. of a suspension of powdered quartz. The section shows three nodular collections of phagocytes, many of which contain quartz crystals.

Fig. IV. is a drawing of one of the nodules under a higher magnification; it shows the early increase of

DRS. POYNTON AND LIGHTWOOD: LYMPHATIC LEUKÆMIA.

FIG I

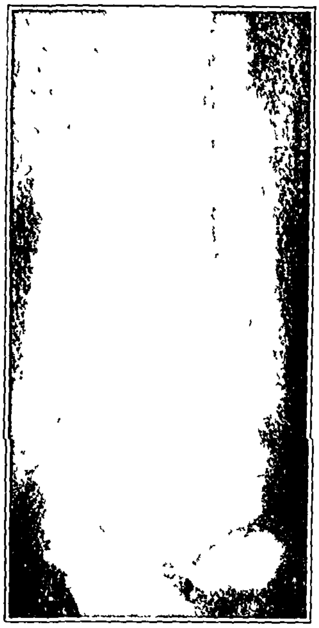


FIG II

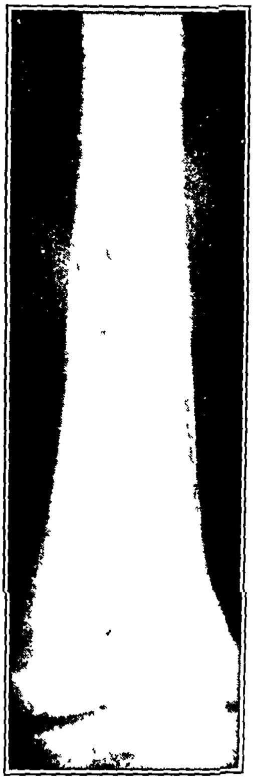


FIG III

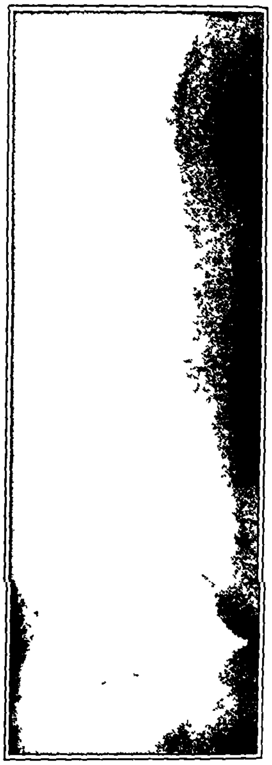
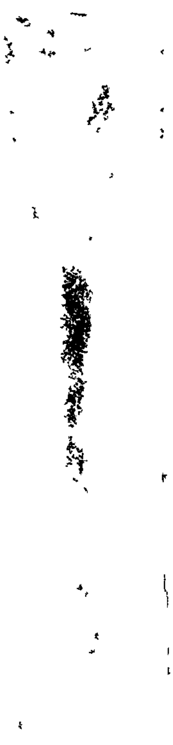


FIG IV



DR. VILVANDRÉ: CALCIFICATION OF ABDOMINAL AORTA.

FIG I.

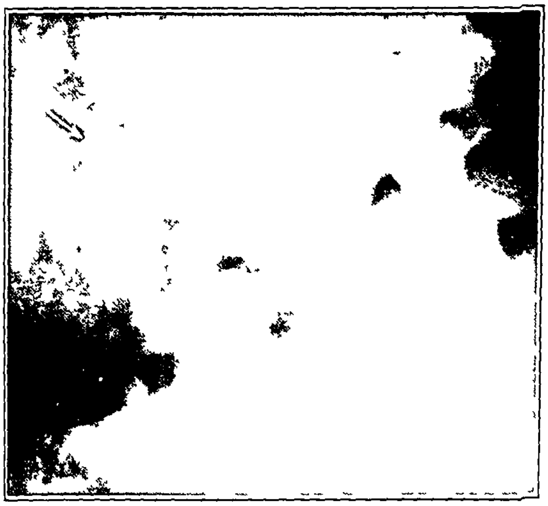


FIG. III.

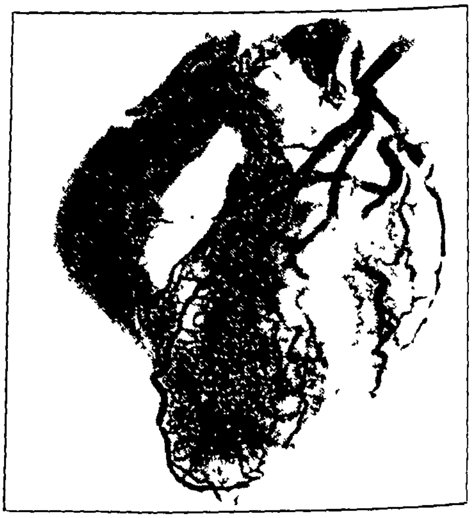


FIG II

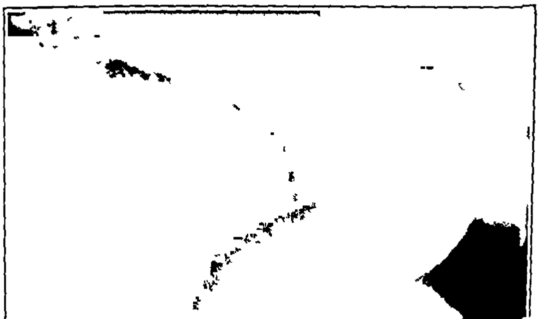
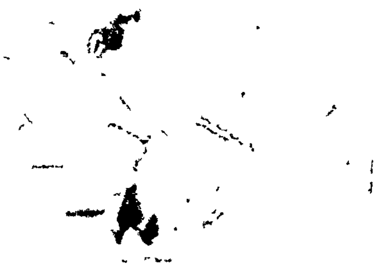


FIG IV.



he suspension is injected under gentle pressure. The introduction of the fluid, and even the mobilisation of the rachea, is often followed by one or two coughs, and there may be some regurgitation through the nose, but the greater part of the inoculum passes directly into the lungs. The needle is then withdrawn and the skin incision closed with a catgut suture. Beyond damping the skin with methylated spirit, more for the purpose of controlling the ur than for any other reason, no special precautions are aken against sepsis. We have not found it necessary to apply anything in the shape of a dressing, and we have never observed any local infection. It is possible, of course, to insert the inoculating needle directly into the rabbit's trachea through the uncut skin, and the same can be done, though with much less certainty, in the guinea-pig. But it is also easy to miss the trachea unless it is fully exposed, and since one of our main objects was to use as few animals as possible, we preferred to be quite certain that all our injections actually reached the lungs. We have found, however, that excessive manipulation of the tissues of the neck especially in guinea-pigs is likely to be followed by a heavy mortality in the early days of the experiment. The more rapidly and cleanly the inoculations are performed, the fewer are the immediate casualties, and in our later experiments we have lost relatively few animals—about 10 per cent.

LEGENDS TO ILLUSTRATIONS ON PLATE.

DRS. POYNTON AND LIGHTWOOD.

FIG. I.—Bone changes in acute lymphatic leukæmia. Note the periosteal "layering" of the humerus and erosion of the cortex near the lower end of the bone.

FIG. II.—Periosteal changes in the shaft of the femur.

FIG. III.—Periosteal "layering" in healing congenital syphilis. (Patient aged 10 months.)

FIG. IV.—Radiogram of tibia and fibula from case of scurvy in a child aged 10 months. Stage of organisation of the subperiosteal hæmorrhage.

DR. VILVANDRÉ.

FIG. I.—Extensive calcareous degeneration of the atheromatous abdominal aorta.

FIG. II.—Calcification of popliteal artery in a case of intermittent claudication. The tibial artery and the dorsalis pedis and its branches also showed extensive calcification.

FIG. III.—The left coronary artery and its branches injected with lipiodol.

FIG. IV.—Post-mortem radiogram of heart showing calcareous atheromatous degeneration of coronary (white patches).

In our early experiments we used dilute suspensions and injected relatively large doses, but recently we have used thicker suspensions, 3 or 4 per cent., and have injected only 1 to 2 c.cm., with apparently much better results. When using such thick suspensions there is always the danger of clogging the larger air passages, but this can be avoided by injecting a little air after the inoculum, thus blowing the fluid into the alveoli. With many dusts it is convenient to inject with an ordinary record syringe and needle, but some of the crystalline preparations tend to stick between the barrel of the syringe and the plunger, and with these it is more convenient to use a glass tube and a large rubber teat, connecting the tube to the needle by thin rubber tubing.

With this method it is easy to inoculate 20 to 30 animals in an hour with amounts of dust which compare very well with the quantities inhaled after many hours in the dusting chamber. If desired the inoculations can be repeated at, say, monthly intervals, and some of our animals have received three or four separate doses.

ADVANTAGES OF THE METHOD.

Once the animal has survived the inoculation it is subjected to no more risk than any member of the laboratory stock; its expectation of life is equally good, and, in fact, we have very few casualties among our animals after the first month of the experiment. The advantages of this method are self-evident; the necessity for the cumbersome dusting plant is avoided, and the laboratory staff is relieved from the supervision of the daily dusting of large numbers of animals over a period of years. The actual number of animals used can be reduced to a minimum. In an experiment involving 30 guinea-pigs, for example, one would expect to have at least 20 to 25 animals alive at the end of three months, and apart from accidents and laboratory epidemics there is no reason why any of these survivors should die except of old age. Again, there is no necessity for the large amounts of dust which the dusting chamber demands; quite small quantities are sufficient, in itself a matter of some importance, and the economy of the method makes it possible to carry out several different experiments simultaneously. We have at present a series of nine experiments in progress, each involving the use of separate dusts or combinations of dusts, and this would have been quite impossible if for each experiment a separate dusting chamber had been required. These advantages, however, fade into insignificance unless it can be shown that the method gives results which can stand comparison with those of the older technique. Our work has not been in progress sufficiently long for us to have produced anything like end-results. Silicosis is a chronic condition taking years to develop, and there is no known method by which the characteristic fibrosis can be accelerated. But so far as they go our results show that the method fulfils certain fundamental requirements.

1. The introduction of the dust suspension into the lungs in the quantities described causes no recognisable trauma of the pulmonary tissue, and there is no apparent difference between the reaction of the lung to dust introduced in this way and dust which is inhaled. Fig. I. is taken from a section of the lung of a guinea-pig killed 14 days after intratracheal injection of 3 c.cm. of a suspension of kaolin. (After removal from the body the lungs in this and the other experiments were distended and fixed with formal saline solution injected through the trachea.) The lung is in no way disorganised. Numerous macrophages and syncytial cells containing kaolin crystals are seen lying free and evenly distributed in the alveoli. The appearance corresponds with that seen in dusted lungs.

2. A very high dust saturation of the lung can be brought about though its distribution may be patchy. Fig. II. is taken from the lung of a guinea-pig killed on the 336th day after the intratracheal injection of a large dose of a concentrated suspension of kaolin. In the part illustrated the lung is practically solid, the alveoli being filled with phagocytes containing the large kaolin crystals. There is as yet no reaction of the actual pulmonary tissues.

3. Dust introduced into the lungs by this method produces lesions which appear to be quite characteristic.

Our earlier results were rather disappointing, since we failed to produce lesions in what we hoped would have proved sufficient time for dusts to have caused fibrosis.[3] But it appears that however the silica reaches the lung, whether as a single massive dose or in repeated inhalations, time is an essential factor in the reaction. Our later results are much more promising, for example:—

Fig. III. is from the lung of a rabbit killed 385 days after intratracheal injection of 5 c.cm. of a suspension of powdered quartz. The section shows three nodular collections of phagocytes, many of which contain quartz crystals.

Fig. IV. is a drawing of one of the nodules under a higher magnification; it shows the early increase of collagen, the first stage in the formation of the typical fibrous nodule.

Fig. V. is from the tracheo-bronchial lymph gland of a rabbit killed on the 557th day of the experiment; it had received intratracheal injections of quartz suspensions on the 1st, 158th, and 217th days. The gland shows characteristic early silicotic nodules.

Fig. VI. is a drawing of a higher magnification of a part of the lesion illustrated in Fig. V.; it shows the development of the *laminated silicotic nodule in an early stage*.

Conclusions.

1. A technique is described for the introduction of dust into the lungs of experimental animals by intratracheal injection.
2. The reaction of the lung to dust introduced by this method is essentially the same as to dust introduced by inhalation.
3. The results obtained indicate that the direct intratracheal injection of dust into the lungs may advantageously replace the dusting chamber for many purposes for which it has hitherto been considered necessary.

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LYMPHATIC LEUKÆMIA,

WITH INFILTRATION OF PERIOSTEUM SIMULATING ACUTE RHEUMATISM.

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AND
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(WITH ILLUSTRATIONS ON PLATE.)

We are publishing this case in continuation of the study of unusual features that may be met with in children suffering from conditions such as leukæmia, grave anæmias, and lymphadenoma. A paper previously published in this journal has dealt with osseous and arthritic manifestations in two cases [1]; another dealt with the occurrence of infective granulomata with streptococcal infection.[2] Though such cases are quite unusual, they serve a useful purpose for those who are particularly interested in the diseases in question. Furthermore, the case we are about to describe is one of no little clinical interest on account of its differential diagnosis.

CASE HISTORY.

A girl, aged 3 years and 7 months at the time of her death, was the fourth child of healthy parents, and there was nothing significant in the family history. Measles and pertussis occurred at about the age of 12 months. She contracted chicken-pox three months before admission to hospital, and after this her appetite became poor.

History of illness.—The first symptoms of leukæmia began seven weeks before her death. There was a complaint of pains which flitted from joint to joint, beginning in the knees and going to the ankles, wrists, and finger-joints in turn; only one or two joints were involved at a time. Her temperature was found to be 101° F., and she sweated when asleep. Two weeks after the onset she developed a slight cough. Ten days before admission one ankle became swollen and tender and the doctor in attendance made a diagnosis of acute rheumatism. The swelling of the ankle subsided, but later it was noted that she did not move her left arm freely, though she could use the hand. In the days immediately before admission there was some vomiting and epistaxis.

On *admission* she was found to be very ill, and in fact she only lived six days. There were large purpuric spots on the trunk and limbs and she was deathly pale. Her left arm was held to her side, and she resented being handled. There was œdema of the ankles and of the feet. The pulse was rapid (132–156); there was a short, sharp first sound followed by a systolic bruit at the apex, and a systolic bruit at the base. Her temperature ranged between 99° and 102° F., but fell to normal on the third day in hospital. Her systolic blood pressure was 100 mm. Hg, and her diastolic 55 mm. The edge of the liver was to be felt one finger's breadth below the right costal margin, and the tip of the spleen was palpable. There were no changes in the central nervous system and the fundi were normal.

The *blood picture* was that of an aleukæmic phase in acute lymphatic leukæmia: Red blood-cells, 1,125,000 per c.mm.; hæmoglobin, 15 per cent.; colour-index, 0·43; white blood-cells, 4700 per c.mm.; differential count: 846 polymorphs per c.mm. (18 per cent.) and 3854 lymphocytes per c.mm. (82 per cent.). The lymphocytes varied much in size and shape; there were no other abnormal cells. The red cells showed poikilocytosis, anisocytosis, and polychromasia. There were 10,320 platelets per c.mm. The coagulation time was 2 minutes 40 seconds, and the bleeding time over 10 minutes.

For some years we have been interested in the bone changes occurring in the blood diseases and a radiological examination of the long bones was made as a routine, but in this particular case the pseudoparesis of the left arm, the tenderness of the limbs, and the history of joint swellings would in any case have called for special investigation. Skiagrams of the long bones, taken by Dr. B. Shires, showed uniform periosteal changes in the femora and humeri (Figs. I. and II.). These changes resembled the appearances seen in chronic periostitis. They could not in this patient have been mistaken for syphilitic osteoperiostitis, scorbutic subperiosteal hæmorrhages, or any ordinary chronic infective condition, and it was thought most probable that they had been produced by subperiosteal leukæmic infiltration.

AUTOPSY.

The body was that of a pale child with purpuric spots on the trunk. Enlarged lymphatic glands were to be felt in the axillæ, neck, and groins. The bones felt normal to the examining finger.

Except for pallor of the brain, the cranium and intracranial structures were normal. The cervical glands were enlarged, pale, and discrete. On opening the thorax the lungs were found to be pale and œdematous, petechial hæmorrhages were seen in the pleura. The lymphatic glands at the root of the lungs were enlarged, and on close examination minute white dots were seen under their capsules. A microscopical section of one of these glands showed that its structure was intact, but under the capsule were to be seen numerous hypertrophied cortical lymphatic nodes. It was these bodies which could be seen macroscopically as white dots through the capsule. These dots were also recognisable on some of the enlarged paratracheal glands. The *heart muscle* was found to be soft and flabby, the right ventricle dilated, the valves normal, and the blood clot very pale. Petechial hæmorrhages were to be seen in the pericardium.

On opening the abdomen it was found that the peritoneum and intestinal tract were normal. The mesenteric glands were slightly enlarged, and one of them was caseous (tuberculous). The preaortic glands were enlarged, being two or three times their normal size. The liver was pale and showed slight venous congestion. Microscopically there was extreme fatty degeneration, mainly of the peripheries of the hepatic lobules, and a few aggregations of 20–30 lymphocytes were to be seen. The spleen, firm and slightly pale, was not enlarged. Microscopically there was a slight ease of its trabecular tissue; the lymphocytes were eased and the erythrocytes reduced. The kidneys were e and showed cloudy swelling of the tubules. In one ce numerous dilated vessels were seen in close proximity an aggregation of lymphocytes, but elsewhere the kidney s bloodless. The suprarenals were found to be normal.

Striking pathological changes were seen when the nora and humeri were split open longitudinally. ch of these bones presented the following general anges:—

1) Along the greater length of the bone a layer of the tex was split from the shaft, parallel to the periosteum. e separated bony layer, which was firmly attached to the riosteum, was rather more than 1 mm. thick. Micropical examination of a decalcified section, stained with in and hæmotoxylin, showed that in places the periosteum s infiltrated with lymphocytes and separated from the rtex by new cancellous bone and osteoid tissue.

(2) At the ends of the diaphysis the marrow was pale and cessively trabeculated.

(3) In the marrow cavity were to be seen elongated kæmic deposits, whitish in colour, and firm to the finger. me of these were softened, and bordering the softened eas there was a zone of gelatinous marrow and evidence ggesting increased erythropoietic activity. The softening s most obvious at the lower end of the left humerus. In is situation the epiphyseal line was hardly recognisable, d there had been *absorption of the bony cortex* (Fig. I.). microscopical section of one of these leukæmic deposits the marrow cavity was examined and found to consist deeply staining lymphocytes, many of which were there were small areas of hæmorrhage. ed and this showed, on a smaller scale, g of the periosteum and laying down bone outside the cortex. The other changes remarked pon in the humeri and femora were not seen. The mporal, parietal, frontal, and occipital bones showed no bnormalities.

No organisms were seen in sections of a leukæmic eposit from the bone-marrow (stained by Gram-Veigert's method and by methylene-blue). Cultures aken from the lymphatic glands and the bone-marrow eposits were bacteriologically sterile, the material eing incubated aerobically and anaerobically on eart digest broth and on glucose broth, and also eing inoculated intravenously into a rabbit, without esult.

THE BONES IN SEVERE ANÆMIAS.

That the bones will be affected in certain cases of leukæmia and severe anæmia is to be expected if we consider the anatomy and physiology of the bone-marrow. In the adult human subject the marrow of the long bones is predominantly yellow, and there is a large reserve available for blood formation which is not used under normal circumstances. The large area occupied by resting marrow is remarkable and it indicates how wide a margin has been provided by nature against possible needs. The bulk of the marrow in the adult is estimated to be about 1420 c.cm., which is 13 times the volume of the spleen and almost equal to that of the liver.[3] In the child the marrow of the long bones is much more active than in the adult, and the fact that the marrow of the femur remains red until the age of 12–14 years illustrates this point.[4] It follows that the marrow reserve in the child is relatively small. In both adult and child any extension of hæmopoietic activity can only take place physiologically at the expense of the marrow fat, because the cavity of the bones is entirely filled with tissue. When the demand made on the marrow is very great, and its response has reached a physiological maximum, any further blood requirements can only be met pathologically and in one of two ways: First, by the formation of extramedullary marrow in unusual situations. This is observed in pernicious anæmia, &c., and has been recorded also in fatal cases of the hæmolytic anæmia of acholuric jaundice.[5] Secondly, by the absorption of bony cortex and expansion of the marrow cavity. This has been seen in dogs after repeated hæmorrhage[6] and after splenectomy,[7] and has occasionally been demonstrated radiologically in blood diseases in children.

Absorption of the cortex of the bones has been reported in leukæmias,[8] [9] when it may be the result either of an excessive demand for new blood formation or due to an invasion of the bone by leukæmic tissue. Greig [10] holds that in such cases of leukæmia, osteoporosis and absorption of the cortex may be followed eventually by osteo-sclerosis. Such osteosclerotic changes occurred in a case of leukæmia described by Schwarz.[11] In Albers-Schönberg's disease (osteosclerotic anæmia) the peculiar "marbling" of the bones is of great interest to the surgeon and to the radiologist, but the interest of the hæmatologist is focused on the severe aplastic anæmia sometimes resulting in these cases from thickening of the cortex and encroachment on the marrow spaces. This osteosclerosis is the underlying pathological process and the anæmia is secondary to it. On the other hand, in these leukæmias, which are accompanied by involvement of the bones, the osteosclerosis is the final stage of that involvement, and must be regarded as secondary to the leukæmic process. This is a distinction which, according to Greig, should be drawn between these two varieties of osteosclerosis associated with anæmia.

Vogt and Diamond [12] have made a radiological study of bone changes in certain children with pathologically hyperplastic bone-marrow. They point out that the changes will be less marked in the leukæmias and more marked in the congenital anæmias such, for example, as congenital hæmolytic anæmia (family acholuric jaundice), sickle cell anæmia, and Cooley's erythroblastic anæmia. These changes consist essentially of a thinning of the cortex with expansion of the shaft but localised erosion of the cancellous bone by marrow tissue also occurs. Wollstein and Kreidel [13] have dealt with the bone changes met with in the hæmolytic anæmias of childhood, and one of us (F. J. P.) has (with A. Moncrieff) recorded such changes in lymphatic leukæmia and in lymphadenoma.[1]

We have been able to find only one radiological account of periosteal changes in leukæmia (Taylor[14]). This case was reported from the Roentgenological Department, Beth Israel Hospital, New York City, and presented features very similar to those of our own patient.

Age 2 years and 10 months. Seven months previously the child went off its legs and the mother noticed that both feet and both forearms were hot, swollen, and tender. Two months later pallor was noted. When admitted the child was found to be a case of lymphatic leukæmia. The extremities could be moved but they were tender. The roentgenograms of all the long bones, including the metacarpals and metatarsals, showed a slight elevation of the periosteum with some productive changes. The autopsy confirmed the diagnosis of lymphatic leukæmia and the microscope revealed lymphatic infiltration underneath the periosteum of the tibia and replacement of bone-marrow.

DIFFERENTIAL DIAGNOSIS OF ACUTE LEUKÆMIA WITH CHANGES IN THE BONES.

There is much practical interest in recalling some of the maladies in which pains in the limbs are a feature in children's illnesses, conditions such as scurvy, syphilitic osteoperiostitis, acute leukæmia, rheumatism, and osteomyelitis, to which also may be added those cases of infantile paralysis in which neuritic pains are predominant. We have reproduced here, in illustration of these pathological states, skiagrams which show the periosteal changes that occurred (1) in our case of acute leukæmia (Figs. I.

and II.), (2) in a case of congenital syphilis (Fig. III.), and (3) in a case of scurvy (Fig. IV.). In passing, we would note that scurvy has apparently become more frequent in its occurrence of recent years.

Each of the diseases which we have mentioned above may be confused with one another in diagnosis —thus scurvy may be called rheumatism, acute leukæmia thought to be rheumatism or even scurvy, and the same may occur occasionally with infantile paralysis. Osteomyelitis, as we all know *too* well, may be most difficult to distinguish from rheumatism, particularly when it is multiple and subacute.

No one doubts that the fully developed diseases are widely different and all recognise the dietetic errors and hæmorrhages in scurvy, the early age and stigmata of congenital syphilis, the multiple symptoms and arthritis of acute rheumatism, the extreme anæmia and altered condition of the blood in acute leukæmia, the localised tenderness, severe illness, and high fever of osteomyelitis, and the paralysis which develops later in anterior poliomyelitis.

It must be admitted, however, that at the bedside there are, in some unusual cases, remarkable resemblances between acute leukæmia, virulent rheumatism, and malignant endocarditis. In all there may be a great pallor and in all purpura. The first sound of the heart in acute leukæmia may be so short and sharp as to suggest a mitral stenosis and be followed by a systolic murmur that can be traced to the axilla. At the base there may be a systolic and even diastolic murmur audible. All show fever, all may have pains in the limbs, and all enlarged spleens. The blood picture is, it is true, very different, but in those cases of leukæmia in which there is a leucopenia skilled examination, which is not always at hand, is needed to show the breakdown in the differential count. The undoubted fact remains that, once started on the wrong track, there may be much difficulty in escaping from the diagnosis of virulent rheumatism to that of acute leukæmia, particularly should the tissue around the joints be swollen and tender as in the case we have described.

We are greatly indebted to Dr. B. Shires for taking the skiagrams which illustrate this paper.

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PRIVATE WARDS AT MAIDENHEAD.—Arrangements for private wards have now been made at Maidenhead Hospital. In return for an annual subscription varying from £1 1s. to £2 2s., according to family, the subscriber will be entitled to the use of a private ward with free maintenance and nursing; doctors' fees will be a matter of arrangement. There is no income limit and no limit of stay, but a patient must have a certificate from a member of the honorary medical staff that the case is suitable for hospital treatment. Should a private ward not be available 15s. a day up to 21 days will be paid to any other hospital or nursing home to which the patient may go.

CALCIFICATION OF THE ABDOMINAL AORTA,

WITH A REFERENCE TO ATHEROMA AND THE RADIOLOGICAL INVESTIGATION OF ARTERIES.

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RADIOLOGIST TO THE LONDON HOSPITAL.

(WITH ILLUSTRATIONS ON PLATE.)

DEPOSITS of calcium salts in arteries may render them visible to the radiologist. Peripheral vessels, especially of the leg, are often demonstrated in Paget's disease (osteitis deformans). In other subjects, too, the arteries in the limbs or the tortuous extracranial ones can also be seen when calcified. Flakes of calcium may sometimes be observed in the arch of the aorta, especially in the transverse portion where the so-called "knuckle," sharply demarcated against the translucent lung, favours their detection. Sharp negatives show narrow crescentic shadows in the outline of the aorta.

The case reported exhibits an unusual degree and extent of calcification of the abdominal aorta, and justifies some remarks upon its detection. It also led me to investigate the natural* though pathological visibility of vessels. Kohler mentions that deposits of lime may be seen in the descending thoracic aorta, and he says that calcified coronary arteries have never yet been demonstrated. I found no mention of a calcified abdominal aorta in his book, but Gibson refers to a case under his care where, under X rays, calcification of *that* vessel was seen to be present in a woman of 68 who complained of abdominal pains which occasionally spread down the inner side of the thighs. He suggests that this may be due to calcification of the aorta.

Calcareous deposits are not evident in radiograms of simple syphilitic aortitis, though they may occ when atheroma supervenes. Small flakes of lime may sometimes be seen in the innominate artery, but they should not be mistaken for minute tubercular deposits (Kohler). In his book Assman shows a patch of calcification (*Kalkplatė*) at the ao- knuckle in a case of arterio-sclerosis. These plaques are due to a localised or patchy thickening of the intima.

Atheroma in the aorta and its bigger branches appears as nodes of different sizes; at first there are translucent or gelatinous plaques, which later become firm or calcareous, and in that state may become demonstrable radiologically. Atheroma of the aorta may be present with healthy coronary arteries. Calcification in the ascending aorta occasionally leads to narrowing or complete occlusion of the orifice of one or both coronary arteries. In the post-mortem room aortic atheroma with calcificati is often seen, while calcification of the cardiac a is less common. The former is a common finding in subjects past middle life.

Among remarkable cases of coronary disease, Jamieson and Hauser reported the case of a boy of 18 who had agonising pain in the chest and died suddenly. At the necropsy coronary throm and calcareous changes, and microscopically a proliferative endarteritis, were found. In Buerger's case the patient was a man of 21 years of age with thrombo-angiitis obliterans, who died following an operation mesenteric thrombosis. Post mortem, marked eroma of the coronary arteries was present. other patient, aged 24 years, is also reported by erger. This patient died suddenly after an amputaion of the right thigh, and post-mortem atheroerosis of the coronary arteries was found. At the int of origin of the right coronary artery (on the ht posterior sinus of Valsalva) was an atheroatous plaque, which narrowed the orifice of the tery even to obstruction. Hughes and Berry ported that a female child of 7 weeks had a sudden tack of cyanosis, and rapid death ensued. Marked ickening and tortuosity of the coronary arteries, hich stood out from the heart like cords, was found, id some patches of calcification were present in the lmonary artery.

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* Natural as distinct from the injection of opaque substances in vessels.

THE CLINICAL PICTURE.

In many instances where aortic atheroma is present o clinical symptoms are complained of during life. he blood pressure may be raised only slightly or ot at all. Gibson quotes Huchard and Pal, who escribed a syndrome "angina abdominis" which hey ascribed to a non-syphilitic lesion of the abdominal aorta. Gibson further mentions a case described y Louis Ramond, where very painful cramps lasting rom half to two hours were present. No sign of isease of the alimentary tract was evident, neither tone in the kidney nor in the gall-bladder, but adiologically dilatation of the abdominal aorta above ts bifurcation was present, and a dark band indicaive of the thoracic aorta above the diaphragm. The blood pressure was not raised (150 max., 100 min.).

Coronary atheroma, on the other hand, more often causes symptoms, but so far has not been demonstrated radiologically except by Lenk, and one object of this communication is to stimulate some interest in the investigation of the coronaries, from a radiological point of view.

It is now acknowledged that most cases of angina pectoris have as their basis atheroma of the coronary vessels. "It must be remembered," says Mackenzie, "that changes similar to those that have affected the aorta may have affected the coronary arteries." When this condition is present, narrowing or even occlusion in the course of the coronaries may occur, or the narrowing may eventually determine a thrombus with resulting occlusion and cardiac infarction.

Vaquez and Bordet refer, under the diagnosis of arteritis and of atheroma of the aorta, to the increased density of the vessel when radioscopically observed. They state that deposits in and increased thickness of the aortic walls, as well as the greater volume of the liquid column, intensify the density of the aorta. They refer to a case of Brodin and Ronneaux, where a dense rounded patch was present at the origin of the ascending aorta. A necropsy proved this to be a small pocket covered with atheromatous plaques. They also mention that in some emphysematous subjects the pulmonary artery may be increased in density because it is atheromatous, whilst the aorta is free of this. In such cases the pulmonary artery is increased in density and the aorta is not.

A CASE OF CALCIFICATION OF THE ABDOMINAL AORTA.

A woman of 58 was referred to me for an abdominal examination. She complained of a weak digestion.

For three years she had pain in the back and epigastrium. and some degree of flatulence. There had been no vomiting, except 20 years before. She gave some vague symptoms of a "lump" in the epigastrium, and a previous history of bilious attacks accompanied by headaches. Recently, there had been constipation, and a loss of weight amounting to one stone in the last three months. She was of an active disposition, and looked pale. The X ray examination previous to the opaque meal showed an enlarged gall-bladder and a large shadow, perhaps a gall-stone. The gastro-intestinal tract showed no abnormality. Subsequently a cholecystogram established the diagnosis of an abnormal gall-bladder and the presence of a large gall-stone. This was confirmed at the operation.

In an attempt at diagnosis on the first examination a lateral view was secured to show the position of the probable gall-stone in relation to the anterior abdominal wall, and also that of a rounded calcareous body on the left side. It was then noticed that there was a dense straight column of calcification in front of the lumbar spine. A further study of other films showed two parallel lines over the spine, and it was then that extensive calcification of the abdominal aorta was diagnosed (Fig. I.). The systolic blood pressure was 160 mm. A faint systolic murmur was heard at the cardiac apex; there was no albumin in the urine. At the operation the aorta could not be felt, probably because of lack of pulsation. The patient made a good recovery.

Clinical symptoms of this severe atheroma were absent, and in all probability such extensive calcification of the abdominal aorta would have been totally unsuspected had it not been for the lateral examination of the abdomen. Lines of calcium of varying length in a single line in front of the lumbar spine had several times come under my observation, but this example showed the extreme degree which it could reach. It is interesting that such an amount of degeneration should not produce symptoms, but a vessel with a large lumen like the abdominal aorta may be calcified without much narrowing, or the lumen may be ample for a proper supply of blood to its territory. In a small artery or a terminal one, the calcification, if accompanied by narrowing, will more readily prejudice the blood-supply of an organ like the heart. Atheromatous changes in elderly people may cause pain in the calves after walking a short distance, and radiological investigation reveals lime deposits in the vessels (Fig. II.).

THE USE OF OPAQUE INJECTIONS.

Can X rays reveal the presence of calcification of the coronaries, or will narrowing of their vessels ever be shown radiologically? Is their detection possible by the recognition of calcified atheromatous plaques, or by the injection of opaque substances of the nature of uroselectan or abrodil? These questions lead to the consideration of lipiodol when injected in the blood-vessels, and to the position of the coronaries and the best way to observe them.

In Orrin's "Systemic Arteries" is to be found a lateral view of the dead fœtus showing all the vessels of the body injected. The radiogram was taken with the arms fully extended above the head. The right and left coronary arteries are seen. The left is placed well anteriorly and at no great distance from the posterior sternal surface. His primary object in demonstrating the vascular system by means of X ray was purely anatomical, and circumstances led him to use a fœtus.

Sicard and Forestier showed that it is possible to inject lipiodol into vessels and to follow its dissemination in the circulation by radioscopy and radiography. Brooks, in 1924, exposed the femoral artery under a local anæsthetic, having placed a tourniquet around the thigh, and injected into the artery 10 c.cm. of concentrated sodium iodide solution. Severe arterial pain followed the injection. Harvier and Lemaire evidence of nucleoli could be made out. Large and small cells seemed to be present in approximately equal numbers.

Urine.—Alkaline. Heavy deposit of amorphous phosphates. A few epithelial cells and an occasional leucocyte were found. No albumin, red cells, casts, abnormal crystals, or bacteria were found.

Histological examination of a section of skin removed from one of the largest nodules on the right leg at the upper *margin of the affected area (see Fig. 2)* showed a diffuse infiltration with lymphocytes of the deeper layer of the cutis vera. The papillary layer and the epidermis were not affected. No plasma cells or endothelial cells were seen, and neither fibroblastic reaction nor caseation was discovered (Fig. 3).

DISCUSSION.

From the dermatological standpoint the differential diagnosis appeared to lie between one of the rarer types of lichen planus, a syphilitic manifestation, and the rare but well-recognised condition of leukæmia infiltration of the skin. In view of the concurrent evidences of syphilis and leukæmia, a histological examination of the skin was necessary. The findings appear to point definitely to a leukæmic origin of the skin lesions, for if they had been gummatous not only would ulceration have taken place earlier in the course of the disease, but, histologically, there would almost certainly have been evidences of plasma cell infiltration and caseation.

Our reason for publishing this case is that skin lesions in lymphatic leukæmia are very seldom seen; when they do occur they are usually of secondary importance, for they commonly develop after the diagnosis is established, whereas in this case the skin lesions afforded the earliest and the chief source of the patient's anxiety.

Our thanks are due to Dr. Goldsmith for referring the case to us individually, and to Dr. L. S. Ashcroft, of Liverpool, for making the preliminary examination when the patient was in hospital.

THE ÆTIOLOGY AND TREATMENT OF ANÆMIA IN PREGNANCY.*

BY MAURICE B. STRAUSS, M.D.,

AND WILLIAM B. CASTLE, M.D.

THE "physiologic" anæmia of pregnancy was investigated by studying the blood, the gastric secretions, and the dietary histories of a group of normal women throughout pregnancy. More than half of these women showed a marked decrease or absence of free hydrochloric acid in the gastric juice during pregnancy, with a return to normal following parturition. These women, and those with poor diets, had an average loss of 12 per cent. hæmoglobin during pregnancy, whereas women who showed a less marked decrease in free hydrochloric acid and who ate satisfactorily during pregnancy lost an average of only 5 per cent. hæmoglobin. Three women with permanent post-histamine gastric anacidity had an average loss of 18 per cent. hæmoglobin in spite of their satisfactory dietary intake during pregnancy. These observations indicate the importance of direct dietary deficiency and deficiency conditioned by changes in the gastric juice in the ætiology of the "physiologic" anæmia of pregnancy.

Thirty-five women who had less than 45 per cent. hæmoglobin during the latter half of pregnancy or following parturition were studied. Nineteen of these were found to have post-histamine gastric anacidity and 12 more had little or no free hydrochloric acid following alcohol test-meals. In addition to this striking incidence of disturbed gastric function, over two-thirds of these patients were found to have had diets which were definitely deficient in iron and other mineral elements and in protein.

None of the 35 patients made any significant improvement during control periods without therapy. Thirty had anæmia of the hypochromic type. Liver extract produced no improvement in these cases; but all treated with large doses of iron improved rapidly, gaining an average of 0·65 per cent. hæmoglobin per day—whether treated during or after pregnancy.

The observations on the hypochromic anæmia of pregnancy correspond to similar studies on idiopathic hypochromic anæmia and indicate that the ætiologic factors of direct dietary deficiency and deficiency conditioned by gastric anacidity are common to both. Furthermore, an analogy may be made between the blood requirements of the fœtus and the chronic blood loss associated with certain cases of idiopathic hypochromic anæmia. In addition, the therapeutic value of iron is shown to be as great in the hypochromic anæmia of pregnancy as in other hypochromic anæmia.

Five patients had anæmia of the hyperchromic type (pernicious anæmia of pregnancy). Two of these became well under therapy with iron and two under therapy with liver extract. In view of the observations previously made upon Addisonian pernicious anæmia, the effect of beefsteak and gastric juice was studied. Beefsteak alone was found to have no effect upon blood formation upon one patient with macrocytic anæmia during pregnancy and to have distinct effect after parturition. Immediately thereafter beefsteak plus normal human gastric juice was found to have a markedly positive effect. Since patients with "pernicious anæmia of pregnancy" remain well once cured, it is reasonable to believe in the light of these observations that the anæmia is due to the temporary loss of the intrinsic factor of the gastric juice during pregnancy with an ultimate return occurring sooner or later after delivery.

The observations on the hyperchromic anæmia of pregnancy indicate that in addition to an iron deficiency in most cases, there is a temporary absence from the gastric secretions of the specific intrinsic factor, the complete absence of which has been invariably observed in Addisonian pernicious anæmia in relapse.

Hence the same ætiologic mechanisms hold for the anæmias of pregnancy as for similar anæmias in non-pregnant individuals, and like therapy is equally efficacious.

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*THE ÆTIOLOGY AND TREATMENT OF SPRUE IN PORTO RICO.**

BY WILLIAM B. CASTLE, M.D.,

AND CORNELIUS P. RHOADS, M.D.

STUDY of 100 cases of sprue in Porto Rico, including cases in all stages of the disease, demonstrates a close relationship between this disease and Addisonian ernicious anæmia as to ætiology and the most atisfactory methods of treatment. As has been postulated for pernicious anæmia by one of us W. B. C.), three possible mechanisms or combinations of these may be involved in the production of the "conditioned deficiency" believed to be the immediate cause of pernicious anæmia. Free hydrochloric acid was demonstrated after an alcohol test-meal in the gastric contents of about half the cases examined; after histamine, in about 20 per cent. more. In certain cases of sprue a lack of "extrinsic factor" in the diet, or a lack of "intrinsic factor" in the gastric juice, both in early and late stages of the disease, was demonstrated. In some advanced cases an apparent difficulty in the absorption of hæmopoietic substances from the gastro-intestinal tract was found to be an additional factor conditioning the major deficiency. The deficient substance is apparently identical with the hæmopoietic substance produced by the interaction of beef muscle and normal human gastric juice or with the extracts of liver described by Cohn, Minot, and their collaborators as effective in pernicious anæmia. The sternal bone-marrows examined after biopsy before treatment showed a megaloblastic proliferation comparable to that seen in pernicious anæmia. No evidence of aplasia was obtained. No significant correlation between *Monilia psilosis* infection and sprue was observed in cultures of the stools of various types of anæmia.

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* Abstra[illegible] made to the American Society for Clinic[illegible] 2nd. From the Thorndike Memorial [illegible] ical Services (Harvard) of the Bostor [illegible] Department of Medicine of the Harva[illegible] n.

* *Abstract of a communication* made to the Association of American Physicians on May 4th. This work was done in Porto Rico under the auspices of the Rockefeller Foundation in collaboration with Dr. George C. Payne and in coöperation with the Thorndike Memorial Laboratory *of the Boston City* Hospital and the Departments of Medicine and of Tropical Medicine of the Harvard Medical School.

In nearly all the cases of sprue prompt symptomatic relief of sore tongue and diarrhœa was obtained from the administration of the liver extract effective in pernicious anæmia, either orally or especially by parenteral injection. The latter procedure was positively life-saving in a few cases and the cost of treatment materially less. In those cases with a hyperchromic blood picture adequate dosage with liver extract alone produced reticulocyte crises and improvement of the blood values occasionally as striking as in pernicious anæmia but usually of a decidedly modified character. In many cases satisfactory progress was not made without the addition of iron ammonium citrate, especially when, after treatment with liver extract, the hyperchromic anæmia became hypochromic in character. In a small number of cases of sprue with an original hypochromic blood picture iron therapy was effective in relieving the anæmia, but not the gastro-intestinal symptoms which, however, yielded promptly to liver extract. In a few cases autolysed yeast preparations produced reticulocyte crises and improvement of the blood values.

MEDICAL SOCIETIES

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

At a meeting of this society held on May 27th, Mr. DAVID LEES presiding, Mr. H. E. MELVILLE (National Provident Insurance Society) opened a discussion on the

Attitude of Life Insurance Societies to Venereal Disease.

He said that an actuary had the responsibility of deciding whether a proposal for insurance should be accepted at the ordinary rate, or at a special premium. To guide him in the decision he had the statements of the medical officer, and whatever statistics were available on the point. The actuary was always thinking in terms of averages, on which the whole principle of life assurance was based. An individual, accordingly, was but one of a group. To be eligible for ordinary rates, the applicant must be physically fit and free from disease at the time, and there must be nothing in his occupation, surroundings, family history, or personal history or mode of life to suggest anything in the nature of an extra hazard. The mode of life could be defined as the moral hazard, a factor always present in the actuary's mind when the insuree had had venereal disease, for it was a question whether health had been deteriorated. Having had such a disease, especially if he had had a venereal disease more than once, he must be regarded as an intemperate person, and so would be charged an extra premium. He asked whether a group of men who had had venereal disease would show a heavier mortality than a group similar in all respects except that they had not had venereal disease. If so, what was the difference? Also, did the extra mortality come early or late in life? Was it related to the man's age or the duration of time since he became infected? Actuaries knew but little about these factors, and statistics available did not help. His office dealt with cases of gonorrhœa and syphilis respectively according to the following general principles.

Gonorrhœa.—If the applicant had had repeated attacks of gonorrhœa, even if each attack had been cured, he was charged extra. If he had had only one attack and had been cured, and the life otherwise seemed ordinary, the ordinary rates would apply. A different attitude was taken if the gonorrhœa had left a stricture; if the stricture had not been cured the proposer would either be regarded as not insurable or he would be definitely loaded; some offices loaded the premium if the stricture had been treated.

Syphilis.—The many statistics gathered on the subject showed a heavy mortality among those who had had syphilis. Scandinavian statistics showed an incidence and a mortality lighter at the middle ages than at the older ages. It was difficult to get the facts about syphilis; often one had to rely on the proposer's own statements. In an important case it was worth spending money to get information from experts, but that was only possible when the person had been recently treated. The office was therefore compelled to lay down certain rules. These were: No syphilitic proposer should be accepted for insurance unless he were (1) thoroughly treated to the best of present knowledge; (2) several years had elapsed from the date of infection and treatment, and no symptoms had developed in the meantime; (3) the proposer's physical condition, family history, and habits were satisfactory. Even should these conditions be complied with, ordinary terms would not be granted. His office considered that if a man acquired syphilis at 40 years of age or over, he was a worse risk than if he were younger when he became infected. He asked what medical justification there was for this impression. The Royal Commission on Venereal Disease had recommended confidential certification of the causes of death; but life offices would oppose anything of that kind. Anything which would prevent disclosure of cause of death would encourage fraud.

Dr. OTTO MAY said that in a proper life assurance office the function of the actuary and that of the medical officer should be complementary to each other. For a sound judgment it was necessary for the actuary to have a series of groups of people all suffering from one impairment; for example, one group of those who had suffered from primary chancre and had radical treatment, with no further developments; a group of patients whose treatment had only begun in the secondary stage; and a further group among whom tertiary manifestations were observed. The chief function of medical examiners should be, not to assess the risk, but to tell the actuary into which group an individual case should be placed. That, however, was an ideal which could not be followed; there was not enough material available in the shape of uncomplicated cases. In practice people who had venereal disease were often accepted at ordinary risks, because it was not known who had had syphilis; the ordinary form did not ask about venereal diseases, and a proposer would scarcely volunteer that he had had syphilis. But the medical form asked the question, and a few who had had syphilis admitted it, perhaps less than 1 per cent.; if it were true that 10 per cent. of the population had had the disease at some time, the commentary was obvious. He dissented from the idea that because a man had had venereal disease he was necessarily a libertine. Dr. May suggested that the interval after infection at which general paralysis supervened was mostly about ten years. The extra mortality from tabes he regarded as comparatively insignificant. A further question to be considered was the maximum incidence of the various forms of aortic disease and myocardial disease which were attributable to syphilis. The insurance office did not want to know what a man would die of after syphilis, but after what interval, in what numbers, and at what ages, and also what effect syphilis had on mortality in various groups. It was open to doubt whether modern treatment of syphilis was altogether an advantage, since the energetic and long-continued courses now declared to be necessary might possibly impair the vitality of the essential organs of the body. One heard of 30 to 40 injections, after the Wassermann was negative, of a substance generally regarded as a protoplasmic poison. Sir Jonathan Hutchinson had taken a favourable view of the outlook for a syphilitic subjected to the treatment formerly considered best. Sir Jonathan had declared he would like to run an insurance company entirely for syphilitics, as it would make a good profit, seeing that a syphilitic would henceforth live a very careful life. Dr. May favoured the disregard of gonorrhœa which had been cured. He had never suggested rating a man up for what was called a moral hazard, but recurrent gonorrhœa, as well as a gonorrhœal stricture, led to the loading of a policy.

Mr. Robert Cubie (National Mutual Life Assurance Company of Australia) said his office took no particular account of gonorrhœa. The influence of syphilis was held to be greater in the later years of life than in the middle years. If no specialist report of the case could be procured a proposal from a syphilitic was not considered at all. If treatment had been thorough, and cure had probably ensued, importance was attached to the family history.

Dr. H. M. Hanschell said that the assumption that syphilologists were agreed on what constituted adequate treatment was untenable. There had not yet been a sufficient interval of time since modern treatment was instituted, nor enough following up of cases to enable the profession to be certain what happened. Though Sir Jonathan Hutchinson remained an optimist, usually the older generation of medical men were pessimistic about syphilis.

Lieut.-Colonel L. W. Harrison suggested that a proposer who confessedly had had syphilis and had been well treated should be accepted at a lower premium than the average. The general population contained a very large number of undeclared syphilitics. He was not a pessimist, having encountered many patients who, after treatment, had remained Wassermann negative for six or more years. Wassermann seldom became positive again after such an interval. Life assurance offices, working on mass principles, often loaded a case too heavily for syphilis. He thought that life assurance offices would be better advised, and would have more proposals if they were to pay attention to the amount of treatment the proposer had received if he had had syphilis. He was not aware that serious damage to the liver had resulted from the use of arsenical preparations.

Dr. Claude Mills thought that if insurance people took into account the factors Colonel Harrison mentioned, the syphilitic, dealt with as an individual and not as a member of a group, would oftener get a fair deal. The question about syphilis should be put by the medical examiner; the proposer should not be required to enter the answer on a form. If a man had been infected with syphilis fairly young, mortality was likely to occur at about 50 years of age. In females, it was agreed, syphilis was a much milder disease than in males.

Dr. Buckley Sharp said that most patients with syphilis discontinued treatment too soon and they could rarely be followed up closely enough to determine whether they were cured. For these reasons he never recommended the acceptance of a syphilitic patient at ordinary rates. Gonorrhœa was often recorded on the form returned by patients. A stricture might not declare itself for some years, but if adequate skilled treatment had been received and the urethroscope revealed nothing abnormal, he saw no reason against acceptance at ordinary rates. There was no absolute criterion of cure of syphilis; a sequel at 50 to 60 years of age might be myocarditis, with aortic regurgitation, and no treatment could restore the damaged valves to the normal. The average period after infection for the onset of G.P.I. was 13 years. These disasters were most likely in cases which had only been partially treated.

Dr. F. C. Doble said he would not load a proposer for syphilis if he had been properly treated and tested, nor for a history of gonorrhœa if he were found free from it. Information on venereal disease was best extracted diplomatically by the doctor, rather than asked for on the form.

The President said that the time was now ripe for syphilologists to give the lead to those responsible for advising actuaries of life assurance societies. It was unfortunate that at present they were being advised by physicians who were not constantly handling syphilitic cases.

A certain percentage of male prostitutes were constantly getting venereal disease, and doctors could do a good work by impressing on them the need of abstinence. The matter could not be dealt with from the mass point of view; it was unfair to load a patient who had had syphilis but was now sero-negative and cured. He thought life insurance people laid too much stress on the family. The main points to consider in life insurance were, the amount and kind of treatment the patient had had, and the stage of his disease at which it was carried out. For five years search had been made in the post-mortem room of Edinburgh Royal Infirmary for cases of lamaged liver following arsenical treatment for yphilis without finding one. He felt sure that neuro-ecurrence was very much rarer than was generally upposed; he had encountered only one case of it in 12 years. That showed that modern treatment was achieving something. He felt that insurance offices were still being guided by the advice of the physicians who practised 25 or 30 years ago.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

At a meeting of this section held on May 20th a discussion on

The Teaching of Obstetrics

was opened by Mr. **Eardley Holland**, who gave a résumé of the gradual evolution which had taken place in the teaching of obstetrics during the past 70 years. He said that perhaps the most significant event that had ever happened for obstetrics was the recent report of the Departmental Committee on Maternal Mortality and Morbidity. The committee considered the revised curriculum recommended by the General Medical Council, which came into operation in 1932, as a great improvement on all previous medical curricula officially recognised, but in their opinion it still fails to allow sufficient time and occasion for the adequate education of the student in practical obstetrics. They concur with the view expressed by the Royal Society of Medicine in 1919 that the practical instruction leaves much to be desired, and in some respects merits emphatic condemnation. This report was forwarded to the General Medical Council, but the licensing bodies were unable to agree to six months' exclusive instruction, nor to the number of cases of labour that were laid down as a minimum.

Mr. Holland then discussed the difficulties, maintaining that the inadequate number of beds was the chief among these. In his opinion the pooling of beds among the various teaching hospitals, and the formation of very large units of not less than 200 beds, was the only solution of the problem.

Mr. **Carnac Rivett** said that at the Middlesex Hospital the theoretical aspect of gynæcology and obstetrics was dealt with in the lectures delivered by the honorary obstetric surgeons during the summer session, and these were made as clinical as possible. In addition to this he, as obstetric tutor, held a revision class four times a year. Antenatal clinics also were held twice a week throughout the year, and were conducted by the two assistant obstetric surgeons. Although the material for antenatal examination was adequate, he pointed out the difficulty of getting sufficient material for actual confinements, particularly abnormal confinements. In the hospital they had 10 to 14 beds, which it was hoped would be increased to 40 when the rebuilding scheme was complete. They had an understanding with the Royal Northern Hospital that their students should go into residence, and should get their district cases in the north of London. At present the students only had one month's practical midwifery, but it was hoped in the near future to increase it to six weeks. He stated that he believed in assistant midwives for teaching normal delivery, and he did not think there was any objection in teaching students and midwives together, except that the midwives took cases which otherwise would be available for students. Referring to the question of abnormal deliveries, he said that for the average student experience in this part of the work was practically absent, and he saw no way of getting over this except by concentrating the cases into three or four large units in London, each consisting of 250 beds.

Dr. **Ninian Falkiner** (Rotunda, Dublin) said he felt strongly that it was not the introduction of new methods into clinical teaching, but the insistence on the residential system for students which would result in the diminution of the maternal mortality, the only real criterion of the efficiency of the teaching. He considered it advantageous to maintain systematic lectures in the university curriculum, in order that the student might know something of the groundwork before entering on his clinical experiences. He thought more stress should be placed on teaching the physiology of reproduction than had previously been done. He thought that it was of serious interest that the mortality in the districts run by the hospitals was so much below that of the general mortality throughout the country, and gave the possible explanation that while doctors are notoriously always in a hurry, students are hardly ever so pressed. He discussed the difficulty of getting sufficient abnormal cases to teach students even to use forceps, but did not at present see any solution. He agreed that the use of phantoms was of value, but did not meet the whole difficulty. He referred to the fact that obstetrics is taught under ideal conditions, but that the student was obliged to go out and practise in conditions which were far from ideal. He thought that more prizes should be offered to stimulate interest, and suggested that these should be given for the cytology of reproduction, the physiology of reproduction, the anatomy of the female pelvis, and the pathology of reproduction.

Mr. **A. C. Bell** (Queen Charlotte's) said he had obtained the views of recently qualified men, and that as a whole they believed that the knowledge of gynæcological conditions on leaving hospital was sufficient for ordinary practice, but in the case of obstetrics this was far from true. He thought that the theoretical teaching of both obstetrics and gynæcology was excellent, but that some time should be given to discussion on the subject of birth control, which would be one of the things most frequently asked of the doctor in practice. He thought that the system of instructing students in pelvic examination in out-patients was practically useless, and held this could be remedied by examinations in the theatre under an anæsthetic by all the clerks present. He thought no student should ever be allowed to conduct a case on the district before he had seen the procedure in hospital, but considered it very important to have a resident obstetric tutor. He did not see any way of overcoming the difficulty of providing sufficient abnormal cases for every student.

Miss **Gladys Hill** (Royal Free Hospital) gave the personal experiences and opinions of a number of students now graduated in medicine, and trained since the institution of the obstetrical and gynæcological unit of the Royal Free Hospital. She sent out a questionnaire and analysed some 96 replies. One hundred per cent. agreed as to the importance of district maternity work; on the question of set lectures, a very small minority derived any benefit at all. Two-thirds of those answering the questionnaire were in favour of demonstrations with phantoms and models, and all were agreed as to the importance of labour ward teaching and antenatal clinics and tutorials.

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Dr. H. M. Hanschell said that the assumption that syphilologists were agreed on what constituted adequate treatment was untenable. There had not yet been a sufficient interval of time since modern treatment was instituted, nor enough following up of cases to enable the profession to be certain what happened. Though Sir Jonathan Hutchinson remained an optimist, usually the older generation of medical men were pessimistic about syphilis.

Lieut.-Colonel L. W. Harrison suggested that a proposer who confessedly had had syphilis and had been well treated should be accepted at a lower premium than the average. The general population contained a very large number of undeclared syphilitics. He was not a pessimist, having encountered many patients who, after treatment, had remained Wassermann negative for six or more years. Wassermann seldom became positive again after such an interval. Life assurance offices, working on mass principles, often loaded a case too heavily for syphilis. He thought that life assurance offices would be better advised, and would have more proposals if they were to pay attention to the amount of treatment the proposer had received if he had had syphilis. He was not aware that serious damage to the liver had resulted from the use of arsenical preparations.

Dr. Claude Mills thought that if insurance people took into account the factors Colonel Harrison mentioned, the syphilitic, dealt with as an individual and not as a member of a group, would oftener get a fair deal. The question about syphilis should be put by the medical examiner; the proposer should not be required to enter the answer on a form. If a man had been infected with syphilis fairly young, mortality was likely to occur at about 50 years of age. In females, it was agreed, syphilis was a much milder disease than in males.

Dr. Buckley Sharp said that most patients with syphilis discontinued treatment too soon and they could rarely be followed up closely enough to determine whether they were cured. For these reasons he never recommended the acceptance of a syphilitic patient at ordinary rates. Gonorrhœa was often recorded on the form returned by patients. A stricture might not declare itself for some years, but if adequate skilled treatment had been received and the urethroscope revealed nothing abnormal, he saw no reason against acceptance at ordinary rates. There was no absolute criterion of cure of syphilis; a sequel at 50 to 60 years of age might be myocarditis, with aortic regurgitation, and no treatment could restore the damaged valves to the normal. The average period after infection for the onset of G.P.I. was 13 years. These disasters were most likely in cases which had only been partially treated.

Dr. F. C. Doble said he would not load a proposer for syphilis if he had been properly treated and tested, nor for a history of gonorrhœa if he were found free from it. Information on venereal disease was best extracted diplomatically by the doctor, rather than asked for on the form.

The President said that the time was now ripe for syphilologists to give the lead to those responsible for advising actuaries of life assurance societies. It was unfortunate that at present they were being advised by physicians who were not constantly handling syphilitic cases.

A certain percentage of male prostitutes were constantly getting venereal disease, and doctors could do a good work by impressing on them the need of abstinence. The matter could not be dealt with from the mass point of view; it was unfair to load a patient who had had syphilis but was now sero-negative and cured. He thought life insurance people laid too much stress on the family. The main points to consider in life insurance were, the amount and kind of treatment the patient had had, and the stage of his disease at which it was carried out. For five years search had been made in the post-mortem room of Edinburgh Royal Infirmary for cases of

REVIEWS AND NOTICES OF BOOKS

ital Records in the Tropics.

By P. GRANVILLE EDGE, Division of Epidemiology and Vital Statistics, London School of Hygiene and Tropical Medicine. London: George Routledge and Sons, Ltd. 1932. Pp. 167. 7*s*. 6*d*.

Major Edge, in collaboration with Prof. Major reenwood, was responsible for many of the very iluable handbooks on the vital statistical systems European countries published by the League of ations. His detailed knowledge of these registration stems, in conjunction with his experience of tropical nditions, therefore, makes him an eminently itable guide to those who are concerned with the lection of systems suitable to tropical dependencies, here the collection of accurate statistics is a task hich has hardly been seriously undertaken. Three apters of the book are devoted to census taking, e details usually required, e.g., sex and approximate ;e. and the possible methods of securing them, and ur chapters to systems of registration of births, eaths, and diseases. Major Edge sets out clearly e ideal which officials should have before them, lding that they must not be discouraged if only two three facts are actually recorded in the early ages of a scheme. That reliable vital statistics ill never eventually be secured he refuses to believe. bviously, as he points out, no hard-and-fast scheme n be laid down; much of it must depend upon cal conditions, which only the worker on the spot n assess. The value of these chapters lies in the ear outline they put before the local official of the ata he must aim at, and in the author's enthusiasm r accurate statistics, some of which will, doubtless, e imparted to the reader. The collection of records hich are immediately labelled unreliable, as is so ften the case at the present time, is mere waste of ime, energy, and money; an inquiry even on the mallest scale with accurate results would be more atisfactory and infinitely more so if it were likely to e the precursor of more comprehensive statistics.

The latter half of the book is devoted to the rinciples of the tabulation of data and their graphical epresentation; and to the computation of simple ates. It contains only matter with which every ompiler of an official health report should be familiar. t might even be considered too elementary if it ere not for the gross elementary errors which actual ublished reports not infrequently contain—e.g., he addition and averaging of rates based upon opulations of widely varying size. A few hours' tudy of it will enable the medical officer to avoid ot only such errors, but the drawing of erroneous onclusions from crude birth- and death-rates.

Thrombose.

Ihre Grundlagen und ihre Bedeutung. By Prof. Dr. A. DIETRICH, Director of Pathological Institute, University of Tübingen. Berlin: Julius Springer. 1932. Pp. 102. R.M.S.80.

THIS, the fourth volume of a special pathological and clinical series emanating from Central Europe, provides an authoritative account of the pathology of thrombosis in the classical German style. His extensive experience of thrombosis as a complication of war wounds, as well as his own experimental observations, have led Prof. Dietrich to ascribe to infection the chief rôle in this process, although he readily admits the importance of other factors such as circulatory disturbances, injury to the vessel walls, and alterations in the electrical charge on the blood-platelets. The latter factors are, however, in his opinion, of subsidiary importance. The mechanism of the infective process is explained as an interaction between the vessel wall, especially the endothelium, and the fluid blood. This interaction is brought about by a sensitisation of the animal to foreign substances, whether these be bacteria or proteins. Protocols, illustrated clearly by a number of microphotographs, are given of some of the experiments upon which this theory is based. These represent an important contribution to the study of thrombosis and merit close attention. The theory offers an explanation of the occurrence of thrombosis at sites remote from the infective focus. Yet the fact that there are sites of predilection for thrombosis, for example in the upper part of the femoral vein, indicates that a static factor is also involved in the process. As Aschoff has said, the process is too complicated to justify its reference to any single factor or cause. It is a pity that the bibliography is incomplete; in all other respects the book will be found most useful by students of the subject.

Nutritional Physiology.

Seventh edition. By PERCY GOLDTHWAIT STILES, Assistant Professor of Physiology in Harvard University. London: W. B. Saunders Co., Ltd. 1931. Pp. 313. 10*s*. 6*d*.

IN this small manual Prof. Stiles explains in simple terms the mechanism of digestion and of the metabolism of foodstuffs. The keynote of the exposition is the energy exchange of the human body, and the modern conception of the immense importance of minute qualitative changes in a diet is not stressed even in this latest edition. Chapters are included which have no immediate bearing on nutritional problems, such as those describing the circulation, the nervous system, and the glands of internal secretion. The reader is warned in the preface that the book should be read in conjunction with manuals on such subjects as food chemistry and dietetics, and it must be regarded as an elementary outline of certain aspects of physiology rather than a study of nutrition.

The Foundations of Medical History.

By Sir D'ARCY POWER. London: Baillière, Tindall and Cox. Pp. 182. 16*s*.

THE Institute of the History of Medicine attached to the Johns Hopkins University invited Sir D'Arcy Power recently to deliver a series of lectures on medical history, and this little volume is the interesting and amusing result. Starting loyally with the history of his own, St. Bartholomew's Hospital, Sir D'Arcy abruptly turns to dietetics and gives a very lively description of dinner-table habits in Egypt, Greece, and Rome, and especially in mediæval England. He believes the prevalent moderation, to be seen in public gatherings as well as at the private board, must be having a real influence on longevity. There are three chapters respectively on biography, iconography, and bibliography in which the author displays an intimate knowledge of great men's lives, their appearance, and the manner in which

Dr. W. J. H. M. BEATTIE thought that the continental system of having one or more very large obstetric clinics in each city to which successive batches of students should go and live for a period was better than the method adopted in this country. Dr. Beattie's post at St. Bartholomew's Hospital of resident assistant physician accoucheur embraced the post of resident obstetric tutor. Among his duties was to give tutorial classes and practical demonstrations, which had the advantage over set lectures that the student is at liberty to ask for information when he does not understand any particular point; but too much attention was paid to the theoretical and purely academical side of teaching, owing no doubt to anxiety that the student should pass his qualifying examination. This evil was brought about by the examiners in obstetrics and gynæcology asking certain questions on ætiology and other matters which are still controversial. He thought that the physiology of reproduction was sufficiently dealt with, and doubted if more detailed instruction would be of any value. He had circularised many of the senior students at St. Bartholomew's Hospital, and found that they considered there was insufficient obstetrical material, especially from the point of abnormal labour. Most students agreed that a longer period of time should be devoted to the study of obstetrics, and possibly less time for gynæcology, which at present extends over three months. He finally stated that he thought the more generalised post-graduate teaching in gynæcology and obstetrics would be an important factor in the better education of the recently qualified man.

Mr. W. G. MACKAY (Glasgow Maternity Hospital) said that much progress and improvement had taken place in the teaching of obstetrics in Glasgow of recent years, under the far-sighted direction of Prof. Munro Kerr. He agreed with a great deal that the previous speakers had said, and in discussing the difficulty of finding material for obstetrical operations, he maintained that the great thing was to devote much time to the simple operations which every doctor should be capable of performing, but not to worry at all about the more difficult operations which require the services of a specialist. He contended that one of the mistakes at present being made was that the final examinations were not sufficiently clinical in character.

Mr. A. J. WRIGLEY (St. Thomas's Hospital) based his paper on the results of a questionnaire from over 20 friends in practice, and criticised severely the present methods of teaching, especially the fact that the student was taught to treat obstetrical cases as if all his work was going to be in an institution or a nursing home. He thought that an undue proportion of the time of the student was spent in the surgical wards, whereas in practice the young qualified doctor would be concerned much more with midwifery.

Mr. J. B. BLAIKLEY (Guy's Hospital) said that, whereas lectures are necessary in teaching, the practical work in the labour room and wards is of prime importance; lectures should be kept to the minimum necessary to form a groundwork of understanding on which the student may build. It is important to live at least three months sufficiently close to the hospital to see the abnormal midwifery dealt with during that period. A student cannot be made into a complete obstetrician, and be allowed to practise with forceps and undertake such obstetric manœuvres as internal version; it is only after qualification that it is really possible for this to be done, when a man is sufficiently in touch with his patients to learn for himself. He thought that with the great amount of obstetrics practised in the municipal hospitals of London, it might be possible, by suitable arrangements, for many more men to obtain experience in obstetrics subsequent to qualification than at present. Examinations should be kept as practical as possible for that reason. At Guy's they were, he said, unfortunate in that the men take "conjoint" pathology in the middle of their obstetric appointment, and this interferes with the attention they devote to midwifery. Mr. Eardley Holland had referred to "an absence of any resident post between house surgeon and the staff"; at Guy's the registrar is resident or lives within a few minutes—also the assistant surgeon. Mr. Blaikley was opposed to the teaching of medical students by the ward sister. An obstetric resident (house surgeon) was, he held, quite competent to teach normal labour if well taught himself; this was the custom at Guy's, where a member of the staff or the registrar was always present for any obstetric interference, and took the opportunity to teach on the case at the time. Mr. Blaikley concluded as follows: "I would differ from those who find 20 or 24 beds too few for teaching purposes; when a fair percentage of emergency cases are admitted, they seem to me sufficient. It is no more possible to learn obstetrics than a handicraft except by apprenticeship, which implies learning by personal experience. Previous to qualification, no more than a sound groundwork for future building can be grasped by a student."

Mr. R. A. BREWS (London Hospital) explained in detail the curriculum. He stated that he thought the frequent change of students made it very difficult to prevent or detect a tendency to slacking in certain individuals. He found that a great many students were reading medicine and surgery when they were supposed to be learning midwifery.

Mr. J. C. MOIR (University College Hospital) said that he believed in the phantom as an aid to teaching, and thought that the systematic lectures would be improved if they were given to students who were at the same stage in their curriculum. It was impossible to give a satisfactory lecture to students, some of whom knew nothing of the subject, and others who were almost ready to qualify.

Miss K. I. PARKES (King's College Hospital) advised more care over the teaching of venereal disease in gynæcology. She rather advocated two courses of obstetrical teaching, one for those who really were going to practise it, and a modified course for those who were merely qualifying in taking up other subjects, such as dentistry.

Mr. C. D. READ (Westminster Hospital) had collected the ideas from a representative body of senior students and newly qualified practitioners, and came to the conclusion that insufficient detail was given on the question of antisepsis under adverse surroundings, such as attended a confinement in the slums. Forceps application is taught almost entirely on the dummy, and he thought more practice might be obtained in actual hospital deliveries. The question of anæsthesia during labour, so necessary in private practice, is only meagrely dealt with. Over 90 per cent. of the cases delivered in the hospital are book cases, and therefore the delivery is normal. He thought that more prominence should be given to the normality of labour and its physiological principles, and more stress should be placed on the danger of unnecessary interference in any way.

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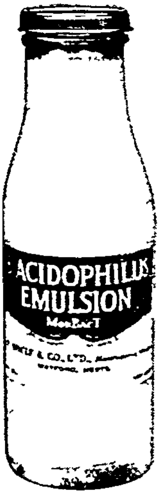

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history has treated them. He closes with a little notice of "Aristotle's Masterpiece," that queer book which, under various titles, used to be on display in the shop windows of the vendors of "rubber goods." One learns with some surprise that its contents, though having an appeal to the prurient, constitute an entertaining summary of mediæval superstitions, and an extraordinary compilation of sixteenth and seventeenth century knowledge. The number of editions is remarkable, and examples of some of them are rare. Specimens of nine editions are in the possession of Prof. E. B. Krumbhaar, professor of pathology in the University of Pennsylvania.

Italian Medicine.

By ARTURO CASTIGLIONI, M.D. New York: Paul B. Hoeber Inc. 1932. Pp. 134. $1.50.

THIS small history of Italian medicine by Prof. Arturo Castiglioni, professor of medical history in the University of Padua, has been translated by Prof. E. B. Krumbhaar, the editor of the useful series published under the title of Clio Medica, who appears in the character of a bibliophile in the work reviewed above. The general claim of the author is that Italy has probably contributed more to the science of medicine in the past 1500 years than any other country in the world. With all allowance for patriotism this seems to be rather an exaggeration. The early labours of Italian anatomists form the main justification of the claim. It is true that the work of Italian surgeons, physicians, and researchers from the latter part of the nineteenth century up to to-day has often been new and of the highest value, but the field of medical science in Italy cannot fairly be described as having had the range attributed to it, and the fact that in a volume of 110 pages we do not reach the nineteenth century until the seventy-fourth page is significant. But Prof. Castiglioni has written a very readable little book in which the essential characteristics of Italian medicine are clearly set out.

Acute Otitis Media.

By W. MAYHEW MOLLISON, M.C.L., F.R.C.S., Surgeon in Charge, Ear and Throat Department, Guy's Hospital. Pocket Monographs Series. London: John Bale Sons and Danielsson. 1932. Pp. 71. 2*s*. 6*d*.

THE issue of this little pocket monograph is fully justified by the necessity of focusing attention on the dangers of acute otitis media, and on the need for perseverance in its treatment, since the prevention of a vast amount of deafness lies in the hands of the general practitioner. Mr. Mollison gives a concise but clear and well-balanced description of acute otitis, under the headings of subacute, or non-suppurative, and suppurative. Mastoiditis is included, as it is essentially a part of acute otitis, the successful treatment of which often involves opening the mastoid cells and antrum. A useful chapter is devoted to varieties of the disease: here, acute otitis as it occurs in infants, the septicæmic form of the disease, the variety due to the pneumococcus mucosus, and that occurring in some epidemics of influenza and associated with hæmorrhagic blebs on the drum, and external meatus are separately discussed. Mr. Mollison insists on the necessity of opening the mastoid in cases where suppuration has persisted for more than five or six weeks, even in the absence of all other symptoms. He advocates the use of drops of glycerinum acidi carbolici without specifying that they should be diluted, for the pharmacopœial drops are of the strength of 1 in 5, whereas the drops usually prescribed are not stronger than 1 in 20. No advice on local treatment of acute suppuration, after discharge has commenced, is offered; and the moot question of the use of dry dressings, drops, or lotions, is therefore not discussed. Interesting illustrative cases are given throughout. The index is quite inadequate, even for so small a book; for it contains but 35 names, and does not mention thrombosis or cerebral abscess.

Real Human Needs.

By R. MACNAIR, M.B., Ch.B. London: Williams and Norgate, Ltd. 1932. Pp. 250. 10*s*. 6*d*.

Dr. Macnair reinforces his straightforward thinking by copious quotations from some recognised authorities, and from some who cannot be regarded as such. He has produced a readable book upon religion, sex, and money in the light of modern thought. The criticism of religion amounts to finding the approaches of religion to vital problems unsatisfactory, whether they are regarded as a revelation based on history or as a code of morals. The author, citing many authorities, brings into juxtaposition various things that have happened or have been written with the idea of showing that the activities of true religion should concentrate upon the solution of the problems of to-day. The section entitled sex is divided into chapters dealing with the meaning of prudery and the functions and demands of sex; and again, while there is nothing new in the teaching, well-known views, truisms, and popular speculations are brought cleverly together, to end with a quotation stating "that the sexual act is not alone for 'the propagation of children.'" In the third section, which deals with money, the writer furnishes a summary of the existing economic system which appears to be a fair one, but the demand for the humanisation of economics requires more justification than has been put forward.

The author of this book has made full use of a wide range of reading. If the reading has left him uncritical as to the value of what the authors quoted have said, and as to the guarantee of authority that is afforded by their names, the attitude is not without its advantages. He has produced a suggestive and readable volume.

Sanitary Law in Question and Answer.

Third edition. By CHARLES PORTER, M.D., B.Sc., M.R.C.P. Edin., and JAMES FENTON, M.D., D.P.H. London: H. K. Lewis and Co. 1932. Pp. 220. 7*s*. 6*d*.

COMPILED by the medical officers of health for the boroughs of St. Marylebone and Kensington, this manual of sanitary law for the use of students of public health now appears in its third edition. The information appears to be remarkably complete and is contained in a small compass. The necessary use of abbreviations, which sometimes gives an algebraic appearance to the text of such summaries, is not overdone; the reader soon learns to know what kind of a L.A. is a C.C. or C.B.C., and what officers are S.I. or H.V. The presentation of facts in the form of question and answer is probably as good a method as any other when, as here, an adequate index is provided.

No student who masters this book need fear the examiner.

THE LANCET.

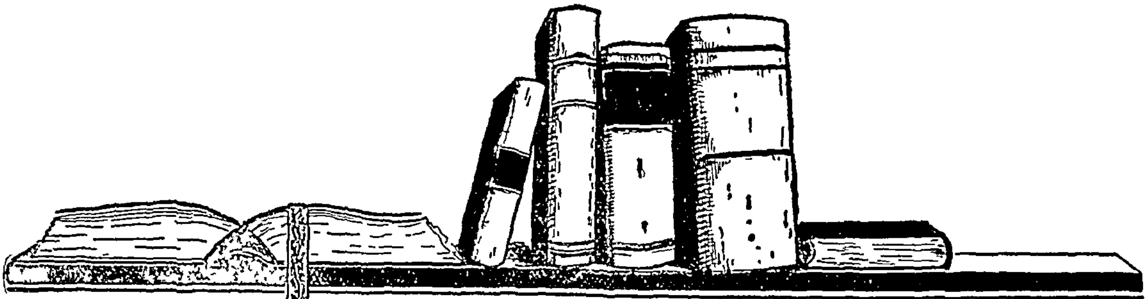
LONDON: SATURDAY, JUNE 4, 1932.

THE TEACHING OF OBSTETRICS.

THE Section of Obstetrics and Gynæcology of the Royal Society of Medicine held its annual "juniors' evening" on May 20th, when registrars and tutors from English, Scottish, and Irish schools gathered to discuss the subject selected for debate —on this occasion the teaching of obstetrics. To say that the discussion, which is reported on another page, was both interesting and instructive is an understatement; each of the younger members of the section stated his case with clarity and conciseness. So many wished to take part that the time-allowance had to be greatly restricted, but all managed to have their say with the minimum of bell-ringing. The views and ideals of those still in their apprenticeship as tutors have valuable lessons for those who have been teaching for many years; recently qualified men not only come fresh to the work but are in close contact with the student and are able to gather from him just where the shoe pinches. Admittedly the student still in hospital has somewhat obstructed vision; he cannot always see the practice of medicine for the examination that looms so large in the foreground of his prospect. But young obstetricians starting private practice have had to face the problem of adapting their institutional experience to the different conditions outside the hospital walls, and those who took part in the discussion were evidently imbued with a keen desire to give their pupils a better equipment for family practice. On the whole, the members of hospital staffs were treated tenderly by those preparing to step into their shoes, save for an occasional plaint that the visiting staff appeared too rarely in the labour room and left too much of the practical instruction to be given by inexperienced house officers. Some of the speakers had sent questionnaires to former students in order to determine which elements in the instruction customary at their school seemed, in the light of subsequent experience, to be useful, and which defective or superfluous. Systematic lectures, as contrasted with the more individual instruction of the tutorial or catechetical class were not favoured by those answering the questionnaires, and the speakers for the most part agreed with this view. It must not be forgotten however that tutorial classes may degenerate into mere spoon-feeding for examinations, and the fact that such instruction is greatly to the liking of the student would not necessarily be evidence in its favour were its value not confirmed by the response of the practitioners.

The shortage of clinical material, the relative infrequency of serious complications, and the haphazard occurrence of labour at all hours of the day and night, raise special difficulties in providing satisfactory training in the treatment of complicated labour that do not affect the teaching of gynæcology, or of the routine work of the antenatal clinic. Hence the discussion largely revolved round the question of the extent and type of the obstetric training to be given to the student who proposes to become a general practitioner. It was postulated that he could not be made into a skilled obstetrician capable of dealing with complicated midwifery. The most that time and opportunity permitted was that he should be turned out imbued with the principles of preventive medicine as exemplified in antenatal supervision; efficient in the management of normal labour and such emergencies as might arise unexpectedly in it; and familiar with the methods of applying the principles of surgical cleanliness in adverse surroundings and with the limitations of operative interference in domiciliary practice. Since instrumental deliveries are required in only a small proportion of hospital cases, which are largely "booked" cases, the occasions on which a student might be allowed an opportunity of applying the forceps under supervision are infrequent. Dr. **NINIAN FALKINER** called attention to the fact that the statistics from districts where the deliveries were carried out by students were more favourable than the general maternal mortality returns, and offered the explanation that while doctors are notoriously always in a hurry, the student is hardly ever so. He added that at the Rotunda Hospital the number of forceps-deliveries was far too small to permit every student to perform even one. The general acceptance of this position led up to various expressions of opinion on the value of teaching obstetric procedures on the phantom, to which were added complaints of the difficulty of obtaining stillborn fœtuses for this purpose owing to recent Government regulations. One speaker went so far as to urge that the student should not be taught any but minor procedures and those for unexpected emergencies, and that the major operations should not be made part of the ordinary training of the student. The necessity of at least two months' residence was strongly emphasised, whereas the actual number of cases to be personally delivered was little discussed and seems to have receded into the background. Certainly it does not now seem to be the burning question that it once was.

Much careful thought had obviously been given by these junior teachers to such practical points as more detailed instruction in the nursing of the lying-in mother and the management of her infant. "How many students have watched a baby being breast-fed?" asked one, and then went on to argue that for part of his period of clerkship the student should be turned into a nurse. The maternity units in the London teaching hospitals were criticised as being too small, and it was hinted that more might be done by collecting the material into large hospitals and segregating



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finding, but this record is important in view of the fact that Yugoslavia is an agricultural State with (as Sučić points out) 80 per cent. of its population engaged in farming and the like. This goes to show that the increase in pulmonary tumours is not confined to the populations of the air-polluted industrial centres of the world.

The fact of its increasing incidence makes cancer of the lung particularly interesting to pathologists at the present time, for one may reasonably assume that as the disease is on the increase so must the factors which are responsible for it be on the increase, and hence be the more readily identifiable. On this assumption a number of extraneous agents, associated with the modern increase of industrialism, have been cited as possible causes. These include road dusts, especially from tarred roads, exhaust gases from motor-cars, and factory smoke—all acting through the medium of air pollution. Yet the now well-established fact that these cancers are on the increase in agricultural lands as well as in industrial towns makes it difficult to associate them directly with industrialism, especially as the industries in the various countries concerned are so diverse. Sučić is driven to the conclusion that diverse factors must be concerned indirectly in the carcinogenesis, all of them acting as irritants to the bronchial mucous membrane or alveolar epithelium so as to predispose to cancer development. It is difficult to believe, however, that even a variety of factors could operate with such uniform effect in such diverse places, both urban and rural, as has been the case with the increase in cancer of the lung. One can believe that the atmosphere of large cities may have deteriorated in the last few decades, but not that the atmosphere of the countrysides can have altered correspondingly, and the simple fact that the cancer increase is so general and uniform seems largely to absolve industrial air pollution from blame. A factor which is of much more uniform distribution than industrialism and which merits careful consideration is tobacco-smoking. Already several authorities have suggested this—and especially cigarette-smoking—as a likely cause of lung cancer, and the notion is certainly gaining ground; yet there remains an evident reluctance on the part of many investigators to associate themselves with it. HOFFMAN[1] has discussed the question fairly fully, and amongst other notable facts he has pointed out that the consumption of light cigarettes has increased from 53,000 million to 108,000 million between the years 1918 and 1928. There is no doubt that men still remain greater tobacco-consumers than women, and the fact that practically all observers find cancer of the lung to be pre-eminently a disease of men, supports the suggestion of a direct relationship between it and smoking. Sučić noted that 25 of his 30 cases were in men, and many other observers have found the proportion in favour of men to be even greater than this. If air pollution of any kind is to be seriously considered, therefore, this particular form of it must not escape attention for, no matter whether he be in the fields of Yugoslavia, on the mountains of Innsbruck, or in the streets of Manchester, the cigarette-smoker who inhales habitually subjects himself to the most concentrated form of air pollution possible to endure.

Unfortunately, information about the personal habits of past cases is difficult to obtain, so that the data which might yield direct evidence on this point are wanting, and the answer must await the collection of further clinical observations. Several workers have of late tried to produce experimental proof that tobacco is carcinogenic—using such methods as subjecting animals to an atmosphere laden with cigarette smoke, or applying to their skins tar obtained from tobacco combustion. A feature of many of these experiments seems to have been the development of cancer in not more than one animal out of large numbers used in each instance. Such was the case with two independent workers in Germany[2] and the Argentine[3] and also with a group of workers in Birmingham[4] whose results have lately appeared. These negative results are, of course, from the nature of things biological, just such as are to be expected in early attempts at a new line of experimental cancer production, and it would be wrong to conclude from them that tobacco is unimportant as a factor in the causation of cancer. However difficult it may be to prove the case against cigarette-smoking, it has not yet been cleared from suspicion.

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[1] Hoffman, F. L.: Cancer, Philadelphia, 1931, p. 50.

[2] Mertens, V. E.: Zeit. f. Krebsforsch., 1930, xxxii., 82.

[3] Roffo, A. H.: Ibid., 1931, xxxiii., 321.

[4] Lamb, F. W. M., and Sanders, E.: Jour. of Hyg., April, 1932, p. 298.

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THE INCREASE IN CANCER OF THE LUNG

FROM centres in nearly all the populous districts in the northern hemisphere we now have reports of a progressive increase in the incidence of cancer of the lung. To the April issue of the *Wiener Archiv für innere Medizin* Dr. DINKO SUČIĆ contributes a paper on its occurrence in Zagreb in Yugoslavia. His material comprised in all 51 cases, 30 of which were investigated in the pathological institute of Zagreb University during the last ten years. In that institute lung cancers have increased from an average of less than 6 per cent. of all cancers in 1923–25 to more than 18 per cent. in 1929. Such an increase is no unusual finding, but this record is important in view of the fact that Yugoslavia is an agricultural State with (as Srčić points out) 80 per cent. of its population engaged in farming and the like. This goes to show that the increase in pulmonary tumours is not confined to the populations of the air-polluted industrial centres of the world.

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[1] THE LANCET, 1930, ii., 846.

[2] Jour. Amer. Med. Assoc., 1932, xcviii., 1439.

[3] Jour. Path. and Bact., 1932, xxxv., 395.

The fact of its increasing incidence makes cancer of the lung particularly interesting to pathologists at the present time, for one may reasonably assume that as the disease is on the increase so must the factors which are responsible for it be on the increase, and hence be the more readily identifiable. On this assumption a number of extraneous agents, associated with the modern increase of industrialism, have been cited as possible causes. These include road dusts, especially from tarred roads, exhaust gases from motor-cars, and factory smoke—all acting through the medium of air pollution. Yet the now well-established fact that these cancers are on the increase in agricultural lands as well as in industrial towns makes it difficult to associate them directly with industrialism, especially as the industries in the various countries concerned are so diverse. Srčić is driven to the conclusion that diverse factors must be concerned indirectly in the carcinogenesis, all of them acting as irritants to the bronchial mucous membrane or alveolar epithelium so as to predispose to cancer development. It is difficult to believe, however, that even a variety of factors could operate with such uniform effect in such diverse places, both urban and rural, as has been the case with the increase in cancer of the lung. One can believe that the atmosphere of large cities may have deteriorated in the last few decades, but not that the atmosphere of the countrysides can have altered correspondingly, and the simple fact that the cancer increase is so general and uniform seems largely to absolve industrial air pollution from blame. A factor which is of much more uniform distribution than industrialism and which merits careful consideration is tobacco-smoking. Already several authorities have suggested this—and especially cigarette-smoking—as a likely cause of lung cancer, and the notion is certainly gaining ground; yet there remains an evident reluctance on the part of many investigators to associate themselves with it. HOFFMAN[1] has discussed the question fairly fully, and amongst other notable facts he has pointed out that the consumption of light cigarettes has increased from 53,000 million to 108,000 million between the years 1918 and 1928. There is no doubt that men still remain greater tobacco-consumers than women, and the fact that practically all observers find cancer of the lung to be pre-eminently a disease of men, supports the suggestion of a direct relationship between it and smoking. Srčić noted that 25 of his 30 cases were in men, and many other observers have found the proportion in favour of men to be even greater than this. If air pollution of any kind is to be seriously considered, therefore, this particular form of it must not escape attention for, no matter whether he be in the fields of Yugoslavia, on the mountains of Innsbruck, or in the streets of Manchester, the cigarette-smoker who inhales habitually subjects himself to the most concentrated form of air pollution possible to endure.

Unfortunately, information about the personal habits of past cases is difficult to obtain, so that the data which might yield direct evidence on this point are wanting, and the answer must await the collection of further clinical observations. Several workers have of late tried to produce experimental proof that tobacco is carcinogenic—using such methods as subjecting animals to an atmosphere laden with cigarette smoke, or applying to their skins tar obtained from tobacco combustion. A feature of many of these experiments seems to have been the development of cancer in not more than one animal out of large numbers used in each instance. Such was the case with two independent workers in Germany[2] and the Argentine[3] and also with a group of workers in Birmingham[4] whose results have lately appeared. These negative results are, of course, from the nature of things biological, just such as are to be expected in early attempts at a new line of experimental cancer production, and it would be wrong to conclude from them that tobacco is unimportant as a factor in the causation of cancer. However difficult it may be to prove the case against cigarette-smoking, it has not yet been cleared from suspicion.

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[1] Hoffman, F. L.: Cancer, Philadelphia, 1931, p. 50.

[2] Mertens, V. E.: Zeit. f. Krebsforsch., 1930, xxxii., 82.

[3] Roffo, A. H.: Ibid., 1931, xxxiii., 321.

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[1] The Lancet, 1930, ii., 846.

[2] Jour. Amer. Med. Assoc., 1932, xcviii., 1439.

[3] Jour. Path. and Bact., 1932, xxxv., 395.

STITCH.

IN its original and complete meaning—a sharp acute pain in the intercostal region—the term "stitch" is rarely employed, although it may be frequently encountered in Shakespeare, and Dr. Percy Kidd, in Allbutt's "System of Medicine," refers to the "agonising stitch of pleurisy." In its limited more popular application, by stitch is generally understood the familiar pain in the side induced by sudden severe muscular exercise, especially if food has been taken only a short time previously. The genesis of stitch has always been of no little interest to athletes, since its occurrence usually demands cessation of the exercise. Some relation to the circulation has perhaps not unnaturally been regarded as the important factor; for example, it has been attributed to tension of the capsule of the spleen through congestion of the viscus, and references are forthcoming in classical and Biblical literature to the operation of splenectomy in runners as a preventive measure. To the objection that the right side of the body is sometimes or as often affected, supporters of the circulatory hypothesis incriminate the liver instead of, or equally with, the spleen, though the performance of hepatectomy was probably not contemplated even by our enterprising predecessors. That oarsmen, in whom the exertion is at least as violent as in runners, are immune from stitch was not considered an objection to the explanation, inasmuch as the muscular movements and the posture in boat-racing would encourage the expulsion of blood from the solid abdominal viscera and so avoid distension. The death blow to the circulatory hypothesis was however struck by Joseph Barcroft in his demonstration that the spleen during exercise is contracted, not distended. Furthermore, the same kind of pain is produced by riding a camel with a jerky action or a motor-cycle on a rough road, although in these circumstances any circulatory influences may be excluded. It becomes necessary therefore to construct a more satisfactory hypothesis based upon ligamentous or muscular phenomena. The subject is entertainingly considered in the *Guy's Hospital Gazette* of April 30th, with subsequent correspondence in a later number. The writer, E. T. C., regards as essential factors the erect posture and a jolting up and down movement. In the erect attitude, he points out, the heaviest viscera, the stomach, liver, and spleen, are partly supported by the musculature of the abdominal walls, and stitch appears in those situations where the walls are less able to provide adequate support, so that the vertical strain on the ligaments is much intensified. The idea that spasm of the diaphragm might be responsible was disproved by the experiments of four Guy's students who voluntarily induced stitch by running after a heavy meal, and in whom fluoroscopic examination failed to reveal any diminution or defect in diaphragmatic movement. During running, whilst maximum excursion of the respiratory musculature of both thorax and abdomen is essential, there is at each expiratory gasp complete relaxation of the muscles maintaining intra-abdominal pressure. If violent jolts coincide repeatedly with this relaxation, the result will be an intermittent tugging strain on the coronary and other ligaments, an "acute physiological visceroptosis" so to speak, an effect which the Guy's writer states will tend to disappear with the better coördinated respiratory movements when "second wind" is established—an opinion which will not, however, be corroborated by all long-distance runners. Stitch, it is clear, is more likely in the case of the untrained; it will be expected in cross-country running where the surfaces to be traversed are rough and irregular, and also in certain runners whose imperfections of style and action lead to jerkiness and vibration. In all probability there is also a constitutional predisposing factor, since, as is well known to clinicians, visceroptosis is productive of symptoms only in those subjects with the appropriate receptive mechanism.

THE LIFE-HISTORY OF TREPONEMA PALLIDUM.

IN a recent examination for a post-graduate degree, a question was asked on the life-history of spirochætes. The marking of the answers must have proved a difficulty; it would be a brave and a learned examiner indeed who could vote any answer either right or wrong. The life-history of *Treponema pallidum* is, in fact, quite uncertain. Some authors, such as Noguchi, held that it simply splits in two; others, such as McDonagh, believe that it has a cycle as complex as that of the malarial parasites. It may be surprising to the reader who has not maintained contact with recent work on syphilis to discover, in a review by Dr. Norman Ingraham,[1] that there are serious reasons for doubting such statements as that the treponema has been cultivated; and that many distinguished workers are not sure that the familiar organism of the dark-ground field is the form, even if it is the species, which transmits the disease. When a piece of syphilitic tissue is placed in culture medium, it is true that treponemata are later found in it. But they may only have migrated from the tissue. And what is happening in the incubation period, when the organisms are not found, or in the tertiary or parasyphilitic stages, when they are only rarely discovered? Even in congenital syphilis, which every student imagines to be characterised by a liver swarming with parasites, actually only one-third of the cases show them. Moreover, arsenical preparations certainly kill the familiar treponema; but they do not always cure syphilis. Is this because the parasite becomes arsenic-resistant? Or because it lurks, entrenched and secure from attack, in some vaguely imagined privacy? Or because it passes through a phase which is arsenic-proof? A further difficulty concerning the treponema is that even those who claim to cultivate it admit that old cultures and subcultures are non-infective. Is this because in them the intermediate, infective stage is lacking?

When, however, we look for suggestions as to how the organism multiplies, we find most contradictory evidence. McDonagh, who first pointed out that dividing forms were absent in scrapings of chancres, stated in 1912 that he had seen the organism developing from a sporozoite through sexual forms (including a "spirochæte") to a minute infective spore. He called the parasite the "leucocytozoon syphilidis." As Ingraham points out, the only published

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[1] Amer. Jour. Syph., April, 1932, p. 155.

ANNOTATIONS

CHLOROFORM AND THE HEART.

CHLOROFORM is a cardiac poison, and in experiments on animals produces certain disturbances of the heart rhythm which appear in a definite order. First there are isolated premature contractions of the ventricle, then multiple beats of the same kind, and still later paroxysmal ventricular tachycardia. Finally, the injury to the muscle culminates in ventricular fibrillation—a fatal condition, since when the muscle contracts in this particular way it can do no useful work. About 20 years ago A. Goodman Levy did valuable work in showing that in cats under light chloroform anæsthesia slight stimuli of various kinds, such as a small injection of adrenaline, or the stimulation of a sensory nerve, or even lifting the animal, were sufficient to cause ventricular fibrillation. In man sudden death during the induction of anæsthesia with chloroform sometimes occurs, and there is strong evidence that this is due to ventricular fibrillation. Although an electrocardiogram showing the heart mechanism in a fatal case of this kind has never been obtained, Dr. I. G. W. Hill, in our last issue, reported some interesting observations on the electrocardiogram taken in the induction stage. Among 16 cases some abnormality was noted in all but three. Bradycardia, and the disappearance of the P waves (which is probably to be interpreted as nodal rhythm), was noted in three instances, but ventricular premature beats, either single or multiple, were the commonest irregularity. Deeper anæsthesia led, nearly always, to their disappearance. That there are risks attending the use of chloroform has also recently been pointed out by Dr. R. W. Hornabrook [1] who heroically submitted himself to anæsthesia under several different conditions. In one experiment the anæsthetic was given when the subject was in a fatigued condition. The pulse became slow and the tracing showed auriculo-ventricular nodal rhythm; at the same time his condition gave rise to some anxiety. He believes that certain precautions will render undesirable effects on the cardiac rhythm much less likely; thus it is suggested that these may be avoided if chloroform is not given to patients who are fatigued, if it is preceded by an injection of morphia and atropine, and if it is administered in the sitting posture or with the head and shoulders raised, when struggling is much less probable. With or without precautions, however, it would appear from these investigations that the patient under light chloroform anæsthesia is often in a precarious condition.

TREATMENT OF CARCINOMA OF TONSIL.

IN a recent paper, Dr. James Duffy [2] reviews the experience of the New York Memorial Hospital in the treatment of 122 cases of carcinoma of the tonsil. He believes that true sarcoma is very rare in this locality and that the majority of cases so described, with early glandular metastases, should, in reality, be classified as lympho-epithelioma. His cases are divided into Grades I., II., and III., and transitional: Grade I. is a radio-resistant, highly squamous type; Grade II., intermediate; and Grade III. has lost its squamous characteristics, and is radio-sensitive; this latter grade, as he admits, might be combined in classification with the transitional type. He considers the results of surgical extirpation so bad that tonsillar carcinoma in any stage must be classed as surgically inoperable, and cannot therefore be divided into operable and inoperable cases; he classifies his cases therefore into the three groups of those with no palpable metastases, those with surgically operable, and those with inoperable cervical metastases. The treatment given is usually a combination of external and interstitial radiation. Both sides of the neck are subjected to a high-voltage X ray beam which includes the primary lesion and the lymph drainage areas, and immediately afterwards a radium pack is directed over the primary growth and the adjacent cervical region. These radiations are given in full erythema dosage and deliver 150 to 180 per cent. of a skin erythema dose to the tonsillar growth. Radon in gold tubes is then implanted into the tumour, in quantity depending on its size, on its histological gradation, and on the clinical response to the external radiation. If there are no cervical metastases on admission, the patient is carefully observed at frequent intervals; if operable metastases develop, or are present on admission, a full and complete dissection is performed, including both anterior and posterior triangles with resection of the sternomastoid muscle and the jugular vein. To be classified as operable, the metastases must not have infiltrated the capsule; they must, except in rare instances, be limited to the same side of the neck as the primary lesion, and the histological grade must be in the more fully differentiated class. If the primary growth is of a very radio-sensitive type, extirpation is not undertaken, but radon in full dosage is implanted in gold tubes after surgical exposure of the node. In inoperable cases the radon is buried through the skin without incision. For discussion of the results of treatment, the cases are divided into those treated from 1921 to 1924, and those from 1925 to 1928 inclusive. As the data were collected in 1929, only patients in the first class can be included in the five-year group; of these there were 49 in all, of which 10, or 20·4 per cent., remain clinically free of disease from five to nine years after the beginning of treatment. Although it is too soon to use the second group for comparison, the figures for the development of cervical metastases show a considerable improvement; the external radiation dosage was increased about 1925, and later a 4-gramme radium pack was added to the equipment. But a decrease in local recurrences from 30 to 24 per cent. is ascribed to the use of gold radon tubes instead of bare glass seeds. Of the radiation transmitted by the glass seed, 96·5 per cent. are beta rays and 3·5 per cent. gamma rays; whereas, with a 0·3 mm. gold filter the proportions are 8·8 and 91·2 per cent. respectively. As might be expected, with the elimination of nearly all the soft necrosing beta rays, the results are far better, and a platinum or gold filter is now almost universally employed in interstitial radiation. The method of treatment of cervical metastases is somewhat similar to that employed by Dr. Elis Berven,[3] in Stockholm, which was noted in our columns at the end of last year; but Dr. Berven prefers teleradium treatment, or the emanation from a large quantity of radium at a distance of 4 to 6 cm., to X rays as causing less reaction and dysphagia. Cases come for treatment at such various stages of the disease that it is of little value to compare the results of treatment of a tropics. Taking a census is not likely to be an easy job when the population to be enumerated gets it into its head that "England has suddenly become unbearably hot. Queen Victoria desires virgins from each village in the territory to fan her day and night, and the census provides the means of selecting individuals for this purpose." Yet it is less than 200 years ago that the taking of a census in this country was opposed in the House of Commons on the grounds that Jehovah did not approve of the numbering of the people. A beginning must be made sometime even if it be on only a very small scale. In fact Major Edge goes so far as to propose that the best line of approach may lie in small-scale intensive inquiries, gradually widening in extent as means become available and as the inhabitants become inured to the cross-examinations by officials and the processes of registration.

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[1] Med. Jour. Australia, March 26th, p. 438.

[2] Surg., Gyn., and Obst., March, 1932, p. 539.

[3] THE LANCET, 1931, ii., 1247.

RESPIRATORY FAILURE IN ACUTE ANTERIOR POLIOMYELITIS.

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THE risk of serious electric shock is acknowledged to be greater from alternating currents, which are now increasingly used for the main supplies throughout the country, than from direct currents. On industrial premises 30 fatalities due to shock from alternating currents at between 200 and 250 volts have occurred during the past five years, as compared with one due to direct currents of similar voltages. In a memorandum (Memo. 161 Med.) to county and county borough councils the Ministry of Health outline precautions against shock from electromedical apparatus, careful attention to which should go far to minimise the risk of accident. It is obvious that old and improperly insulated apparatus is in itself a grave source of danger. A recent fatality was due to loose fastenings in the metal holders of a radiant heat bath, the patient under treatment being electrocuted when he grasped the bedstead, which was in contact with a hot-water pipe. It is essential when patients are receiving electrical treatment in bed that the iron bedstead should not be in contact with any earthed metal—e.g., heating or water pipes, radiators, or even an "earthed" wireless receiver. Where apparatus not insulated from mains is in use, it is undesirable that patients undergoing treatment simultaneously in the same room or ward should be within reach of each other. The source of supply for heat treatment by electrothermal compresses should always be at low voltage. Patients wearing wireless headphones while undergoing electrical treatment, or handling electrical apparatus, should be protected by the insulation of the output circuit to which the headphones are connected. Internal mesh guards should be fitted to the lamps and holders in radiant heat baths, and to projectors for light treatment. In general the use of sets for generating electricity (as galvanic, faradic, and sinusoidal currents) which are not isolated electrically from the source references to work on this theory confirm it; much as (according to Chesterton) all the evidence on the question of ghosts is positive. McDonagh himself has since left the narrower field of syphilitic ætiology; but it is certainly strange that his work, which has been confirmed, is not more often mentioned and tested. Again, there is great difference of opinion as to whether the organism is filtrable or not. The question is possibly insoluble. When positive inoculations or cultures are stated to have been obtained from treponema-free filtrates, it is impossible to deny the argument that a few were overlooked. A second method of division has been suggested by Meirowsky, who believes the treponema to be a higher fungus. It was stated to be a protozoon by Noguchi, for a number of reasons, most of which are now held to be false. Meirowsky states he has seen the parasite bud. Levaditi and others hold that it goes through stages from an ultramicroscopic particle to the full fledged spiral. Quite apart from this observation, they contrast the almost invariable virulence of lymph glands, in early syphilis, with the absence of parasites. This fact, they explain, is due to its existence in a filter-passing stage.

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[1] New Eng. Jour. Med., April 28th, p. 887.

The conflict of evidence is highly confusing. The difficulties of the case are, of course, largely due to the optical peculiarities of the ultramicroscope. Even in the hands of the expert it is a treacherous instrument; in the hands of the inexpert it is responsible for a high percentage of laboratory "howlers." There are few things as certain as that the *Treponema pallidum* causes syphilis. But whether it does so in the form familiar to us, or what its life-history may be, are very far from proven; fit questions as yet for the post-graduate examiner.

DIPHTHERIA IMMUNISATION IN INFANTS.

THERE is reason to think that if active immunisation is to make any substantial reduction in the incidence of diphtheria in a community the effort must be concentrated on children of pre-school age.[1] If so, it is important to determine the youngest age at which it is profitable to begin. It is known that most infants, of town-bred mothers at least, possess at birth sufficient maternally transmitted passive immunity to render the Schick test negative. This transmitted immunity persists in the majority at Schick-negative level for about three months and then wanes somewhat rapidly until at six months of age a high percentage of infants are Schick-positive and therefore at risk following exposure to infection. In some infants this passive immunity is lost more slowly and the Schick test may change, for this reason, from negative to positive within the first three years of life. The acquirement of active immunity as the result of subclinical doses of infection may again reverse the Schick test which then becomes permanently negative. In a recent paper J. Blum[2] draws attention to the effect of transmitted maternal immunity upon the success of active immunisation. In a home for infants Schick tests were performed at frequent intervals varying from six months to three years after immunisation. It was found that the percentage of positive reactions to the first test after immunisation from birth to nine months of age was less than the percentage of positive reactions to the later test. The greatest proportion of positive reactions following immunisation (32·4 per cent.) occurred amongst infants from birth to three months, and the smallest proportion (5·4 per cent.) amongst the oldest children of from two to four years of age. The proportion of positive reactors in the three to six months and six to nine months groups was the same (25·7 per cent.), whereas in the nine to twelve months and one to two year groups the percentages were 15·4 and 8·3 respectively. These figures demonstrate clearly a fact which is well known to immunologists—namely, that the existence of passive immunity may damp down and render less effective the stimulus of the prophylactic to the production of antitoxin by the tissues. The response is poor. While it is customary in many immunisation clinics, and should be in all, to perform whenever possible a confirmatory Schick test at an interval after immunisation in order to ascertain the fact of immunity, the preliminary Schick test, on grounds of expediency and economy of time, is often omitted in the case of children under 6 or even 8 years of age. After that age the preliminary test is desirable not only because the proportion of natural immunes may be considerable, thus rendering injections unnecessary, but also because the children may have become protein-sensitive, and a modified dosage may be required. Unless the Canadian "reaction test,"[3] which consists in the intradermal injection of a small amount of diluted toxoid, is employed, sensitiveness to the proteins contained in the prophylactic is only to be ascertained by the appearance of a pseudo-element in the Schick test. As Blum points out, if it is desired to immunise young infants, the best time to begin in order to get a satisfactory response is when the passive immunity inherited from the mother is lost. This, again, is only to be determined by a preliminary Schick test, which he urges should never be omitted before immunisation in the case of infants under 9 months of age. Omission of the test, Blum says, is hazardous and may lead, as his data show, to a false sense of security. It would seem that the practice adopted by many clinics in this country of beginning immunisation at 12 months of age is reasonable and permits, if practical difficulties exist, of the omission of the preliminary Schick test. Before that age the test should always be done.

THE COLLECTION OF STATISTICS IN THE TROPICS.

THE elaborate systems in vogue for the collection and publication of vital statistics in modern civilised states are certainly not without their critics—whose numbers are likely to increase in these times of national economy. The majority of persons interested in problems of public health are, however, agreed that accurate vital records are the most satisfactory yardstick by which the success or failure of public health measures and of the applications of preventive medicine can be gauged. What is true of western civilisations is no less true of the tropics. But in the latter at the present time the yardstick is nearly entirely absent. Even when statistical records are included in official reports they are often valueless, as their authors cheerfully admit, owing to their unreliability. Major Edge's object in a little book reviewed on another page is to examine the difficulties in the collection of accurate vital statistics in tropical territories, and to outline schemes by which he considers the essential data could eventually be secured. The process is likely to be very slow and Major Edge makes no attempt to minimise the difficulties facing the worker in the tropics. Taking a census is not likely to be an easy job when the population to be enumerated gets it into its head that "England has suddenly become unbearably hot, Queen Victoria desires virgins from each village in the territory to fan her day and night, and the census provides the means of selecting individuals for this purpose." Yet it is less than 200 years ago that the taking of a census in this country was opposed in the House of Commons on the grounds that Jehovah did not approve of the numbering of the people. A beginning must be made sometime even if it be on only a very small scale. In fact Major Edge goes so far as to propose that the best line of approach may lie in small-scale intensive inquiries, gradually widening in extent as means become available and as the inhabitants become inured to the cross-examinations by officials and the processes of registration.

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[1] See THE LANCET, May 14th, p. 1052.

[2] Jour. Amer. Med. Assoc., May 7th, p. 1627.

[3] Burke, F. S.: Canad. Pub. Health Jour., 1930, xx., 209.

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NARROW SPECIALISATION.

THE alternative educational system, characteristic of our public schools, which involves choice at an early age between the humanities and science, marks a transitional period. The distinction between the classical and modern side of a school is already less rigid than it was, and there is much overlapping. Most educational authorities are in fact agreed that anyhow up to the age of 16 specialisation should be discouraged. Unfortunately, however, as Sir Walter Fletcher pointed out in the course of an address to the Royal Institution last Friday, narrow specialisation after that age, and indeed throughout the undergraduate's career, has been pushed to excess. It is possible, and even usual, for students of physics and chemistry to proceed through school life and to a university degree without ever being made aware of the relevance of their work to matter endowed with life. The system under which university scholarships are allocated naturally influences the teaching in the higher forms of schools, and encourages concentration on physics and chemistry to the exclusion of biology. In a leading article in *Nature* last week W. H. G. deplores the spoon-feeding of ordinary students to enable them to gain honours degrees, since this policy favours "the present highly specialised school science teaching with its shocking neglect of biological science." Sir Walter Fletcher has peculiar opportunities for watching the subsequent development of the raw material from which students of science are made, and his comments merit close attention. It is wholly wrong, he contends, that the acquisition of manipulative and analytical skill should be associated chiefly with inanimate matter, when it is so urgently needed for the service of biochemistry and biophysics. It is to this absence of a broad basis of training that Sir Walter attributes the fact that organic chemists have been less active in promoting the growth of biochemistry than have physiologists. His plea for the encouragement of the more general study of living matter was the more effective since it followed a masterly survey of recent history in medical research. He showed how the varied fields now being explored call at every point for the intensive application of physics and chemistry, and illustrated by apt examples the absurdity of allowing artificial boundaries to separate the different sciences on which progress in medicine must depend.

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SPECIAL ARTICLES

SOME THOUGHTS ON MEDICAL EDUCATION.*

BY SOMERVILLE HASTINGS, M.S.LOND., F.R.C.S. ENG.

THE medical profession in England is recruited to-day from a small proportion—approximately one-sixth—of the population, and all the ability and skill that exists in the other five-sixths is, as far as the science and practice of medicine is concerned, entirely wasted. I am aware that there exist many scholarships providing free of all cost a complete course of study for a medical degree, but unfortunately the student has to be fed and clothed and housed whilst he receives instruction. I am also aware that there are some 200 university scholarships given yearly by the Board of Education by which not only educational facilities but also an adequate sum for maintenance is provided. These scholarships are however tenable for at the most four years and a course of study for a medical degree takes at least five. As far as I have been able to discover there is not in England a single maintenance scholarship which will enable a boy or girl, whose parents are unable to maintain him/her without earning, to become qualified as a doctor. It may be objected that it is always possible for such an individual to take up some other trade or profession and, having saved money, to enter as a medical student. In exceptional cases this may of course be possible, but the best time for learning is immediately after leaving school, so that those who have spent several years in some other calling will find it difficult to start afresh their career as students.

MAINTENANCE SCHOLARSHIPS.

What we require are maintenance scholarships from the secondary schools to enable boys and girls who have the capacity to qualify as doctors and dentists to do so without any cost to their parents. If the nation so desired it, a provision could be made that those accepting such scholarships should agree to undertake service wherever this was required for the first three years after qualification, as is done in Russia. Under conditions of financial stringency, such as exist at present, it is not likely that the medical schools would raise any objection to accepting such students. If they did it would be a simple matter to found medical schools attached to the municipal hospitals, many of which are not only larger than the voluntary hospitals but contain clinical material of greater value for teaching purposes for those who will be entering general practice. The presence of students in a hospital is definitely advantageous to the patients. Students tend to keep the medical staff up to the scratch and attract to a hospital the best physicians and surgeons, because many of these are fond of teaching for its own sake and also because students when qualified are likely to call into consultation those whose opinions they have learned to value and respect. The foundation of medical schools at municipal hospitals would therefore be advantageous to these hospitals.

In Russia, where the whole cost of medical training is borne by the State, students are for the most part recruited from the factories and collective farms. Young men and women of promise are nominated by the local soviets and, if found suitable, are given a five years' course of training. This method is said to be yielding very good results. It must have this advantage, that the student will commence his studies with some knowledge and experience of the world as it really is. His outlook will not be confined to that of the nursery and public school as was the case with many of us. And because of this he will be able to appreciate much more fully the importance of environment in the ætiology and prevention of disease. On the other hand, he will probably be able to cram his mind less easily with that useless knowledge that most of us have been able to forget so successfully directly our examinations were past.

TRAINING FOR THE FUTURE.

The training of the medical student must be carried out on the assumption that he will probably live for some 30 or 40 years. We must therefore prepare his mind for changes that are inevitable in the organisation of the profession as well as for advances in scientific knowledge. The saying that "the centre of knowledge is for ever shifting" is surely true of the science and practice of medicine. We cannot of course tell in what directions progress will be made, but during recent years the physical sciences have been called in to an increasing extent to assist medicine, and marked advances have taken place in biochemistry. The curriculum is already much overloaded, but I think the burden could be reduced if more principles and less detail were taught and if a good deal of pharmacy and those parts of anatomy and physiology that can have no bearing on practical medicine were cut out. I am speaking now of the training of the general practitioner. Above all else the training in the preliminary sciences should be directed to the development of the type of mind that will collect all the facts and look at all sides of a question instead of jumping to a conclusion.

The human body differs so markedly from a cabbage that I fail to see what good purpose is served by teaching a medical student anything more than the most elementary principles of botany as a part of biology. There is far too much separation between the different subjects of the curriculum. The student takes his first and second examinations, and at once forgets most of what he has learned because it is not evident to him that these preliminary subjects have anything to do with what will be his life's work. The bearing of these on the study of medicine should be made clearer, so that the student may see his course of study as a continuous process designed to make him an efficient doctor.

A large proportion of the cost of medical education is borne by the State. It has reached as much as 60 per cent. in the case of one medical school and averages about one-third of the total amount expended. The practitioner has, therefore, definite obligations to the State that has helped to pay for his education, and can never justly regard himself merely as a private trader. His activities are already controlled and restricted in different ways. He is compelled by law to notify certain diseases, to give certificates of the cause of death, to order certain drugs only under prescribed conditions, and so on. The student must be taught to realise that his activities are of such of main supply, is deprecated. In the safer method of construction known as "earth free," electric shock at mains pressure would be possible only if a breakdown of insulation between the two systems occurred, and in good-class apparatus there seems to be no great risk of this occurring. For medical diathermy treatment the apparatus favoured is that which makes provision for the patient's circuit to be isolated electrically from the intermediate (or spark gap) circuit; the spark gap to be mounted inside the cabinet or enclosure containing the apparatus; the door of the cabinet or enclosure to be interlocked with the source of main supply so that the latter is disconnected when the door is opened. Regular and systematic inspection by competent experts should be made of all electromedical apparatus to ensure the maintenance of efficient insulation.

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* Presidential address to the Socialist Medical Association on May 29th, 1932.

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THE executive committee of the British Social Hygiene Council announce that, after further consultation with representatives of the British Medical Association, they have decided to abandon their proposal to approve the opening by their secretary-general of an economically self-supporting personal problems bureau, under the auspices of the Council, as to do this might be held to render it impossible for the British Medical Association to continue to be represented on the Council. At the request of the committee Mrs. Neville Rolfe has agreed in the circumstances not to proceed with this project.

GENERAL MEDICAL COUNCIL.

SUMMER SESSION, MAY 24TH–28TH, 1932.

Penal Cases reported by the Dental Board.

THE Council ordered the erasure from the Dental Register of the names of the following practitioners, "Dentists, 1921," who had been reported by the Dental Board for obtaining money from friendly societies under false pretences: Frank Cecil Earle, 64, Glencoe-street, Anlaby-road, Hull. Archibald MacNab Robertson, 16, Rosefield-avenue, Portobello, Midlothian. William Patrick Donnelly, 33, Templemore-avenue, Belfast. The first-named had also been found guilty of covering an unqualified practitioner.

Penal Cases adjourned from Previous Sessions.

The Case of James Gordon Bell, M.C., registered as of 47, Barrow-road, Bristol, L.R.C.P. Edin. 1914, L.R.C.S. Edin. 1914, L.R.F.P.S. Glasg. 1914, M.B., Ch.B. 1914, U. Edin., who had been summoned to appear before the Council on Nov. 27th, 1930, on the following charge:—

> "That you were convicted of the following misdemeanours,—viz.: (1) On Feb. 21st, 1928, at the Sheriff Court, Stirling, of driving a motor-car recklessly while in a state of intoxication, and were fined £15, licence suspended until date of expiry, and prohibited from obtaining another for two years thereafter; (2) On May 5th, 1930, at the Sheriff Court, Dunfermline, of driving a motor-car negligently, and driving said motor-car against a tramway car, and were fined £3, current licence suspended, and disqualified from obtaining another for five years from expiry of current licence; (3) On May 17th, 1930, at Edinburgh Police Court, of being drunk and incapable, and were fined 15*s.* or ten days' imprisonment."

The Council had postponed judgment in June 1931, subject to the usual conditions of good behaviour and the production of favourable written testimony from a number of professional brethren.

Dr. Bell appeared but was not represented. Mr. Harper, solicitor to the Council, read testimonials written by certain medical men on the respondent's behalf, and a letter written to himself by the respondent.

Dr. Bell, examined as a witness, said that he was trying to build up a practice, but that his health was poor. The Council decided not to erase his name from the Register.

The Case of Alan Gray, registered as of 65, Moston-lane, Blackley, Manchester, M.B., B.S. 1925, U. Durh., who had been summoned to appear before the Council on the following charge:—

> "That you were convicted of the following misdemeanours—viz.: (1) On Sept. 13th, 1927, at the Blyth Police Court, of being drunk in charge of a motor-cycle, and were fined £1 and £1 11*s.* costs, and of driving the motor-cycle to the danger of the public, and were fined £1. (2) On June 15th, 1931, at the Middleton Borough Police Court, of attempting to drive a motor-car whilst under the influence of drink, and were bound over for 12 months in the sum of £25 to come up for judgment if called upon and ordered to pay £2 17*s.* costs."

Dr. Gray appeared. Mr. Harper read testimonials on his behalf, and the respondent gave assurances of his intention never again to offend in the same manner. The Council decided not to erase his name.

The Case of George Francis Donaldson Perrott, registered as of 46, Belsize-road, Uxbridge, Middlesex, M.R.C.S. Eng. 1928, L.R.C.P. Lond 1928, who had been summoned to appear before the Council on the following charge:—

> "That you were convicted of the following misdemeanours—viz.: (1) On June 16th, 1930, at the Westminster Police Court, of being drunk while in charge of a motor-car, and were fined £25 and £6 6*s.* costs, eight weeks' imprisonment in default, and your licence endorsed and forfeited for 12 months; and (2) On March 7th, 1931, at the Bournemouth Police Court, of being under the influence of drink to such an extent as to be incapable of having proper control of a motor-car of which you were the driver, and were fined £30 and £1 16*s.* 6*d.* witness fees, or three months' imprisonment in default, and were disqualified for holding a licence for 12 months."

Dr. Perrott appeared but was not represented.

Mr. Harper read testimonials written by medical men on his behalf, in one of which it was suggested that his probation should be extended for a year.

Dr. Perrott said his appointment at his hospital ended in June. It would be very difficult to get testimonials if he was moving about, and another year's probation would debar him from taking a practice. The Council decided not to erase his name from the Register.

New Penal Cases.

A CONVICTION FOR MALPRAXIS.

The Case of Mrs. Rona Lockhart Wotherspoon, registered as of 293, Main-street, Barrhead, Renfrewshire, L.R.C.P. Edin. 1914, L.R.C.S. Edin. 1914, L.R.F.P.S. Glasg. 1914, who had been summoned to appear before the Council on the following charge:—

> "That you were convicted on Nov. 24th, 1931, at the High Court, Glasgow, of the following offence—namely, of attempting to procure abortion by using an instrument, and were sentenced to nine months' imprisonment."

The respondent did not appear. Mr. Harper informed the Council that she was still serving her sentence and that she had written to him asking for an adjournment, as she had no money to employ a legal adviser. The Council did not see fit to postpone the hearing, and directed that the respondent's name be erased.

MOTOR-CAR CHARGES.

The Case of James Francis Patrick Devlin, registered as of 163, Lees-road, Oldham, M.B., B.Ch. 1916, N.U. Irel., who appeared before the Council on the following charge:—

> "That you were convicted at the Manchester City Police Court: (1) On June 14th, 1924, of being found drunk on a public highway, and were fined 5*s.* or six days' imprisonment; and (2) On Dec. 14th, 1931, of being in charge of a motor-car on a public road while under the influence of drink, and were fined £15 and ordered to pay 31*s.* 6*d.* extra costs or 49 days' imprisonment and your licence endorsed."

Mr. Harper read testimonials on Dr. Devlin's behalf, also two letters from the respondent. Dr. Devlin gave his assurance that nothing similar would occur again and the Council decided not to erase his name from the Register.

The Case of Frederick Percy Richard Gover, registered as of c/o Messrs. Gover and Co., 8, Bush-lane, Cannon-street, E.C.4, L.R.C.P. Edin. 1910, L.R.C.S. Edin. 1910, L.R.F.P.S. Glasg. 1910, who had been summoned to appear before the Council on the following charge:—

> "That you were on March 2nd, 1932, at the Mansion House Justice Room in the City of London, convicted of the following misdemeanour—namely, of driving a motor-car while under the influence of drink, and were fined £100 and 3 guineas costs and your licence suspended for three years."

Mr. Gover appeared in answer to his notice and was represented by Mr. W. B. Frampton, instructed by Messrs. Percy Robinson and Co.

Mr. Harper laid the facts before the Council, pointing out that this was in fact Mr. Gover's fifth conviction, the first having been in 1916. Convictions had included both drunkenness and careless driving. He had served one month in the second division in 1919, and in 1920 had run down a woman in Kingsway. An inquiry had been held under the National Insurance Acts in February 1921, and respondent had then declared that he would never drive a car again.

importance that the State will in the future be compelled increasingly to claim his assistance, and that inevitably the doctor must become a full-time State servant. Because this form of evolution appears certain, and because patients are beginning to demand it of him, the doctor of the future will have to know much more about the prevention of disease.

PREVENTION OF DISEASE.

"The teaching of medicine and its practice has," said Sir George Newman, "been all too often preoccupied in a confused and unequal struggle with end-results." In the same lecture he pointed out that we must teach preventive medicine not only as a special part of the curriculum, but introduce the preventive principle and the preventive trend into the main subjects—physiology, pathology, medicine, surgery, and obstetrics. The doctor of the future will be called upon to teach his patients the laws of health much more than he does at present. Soon after qualifying I remember being sent for by a intelligent woman to attend her young child for some trifling ailment. She made this the excuse for asking me a thousand questions about the food, clothing, exercise, sleep, and care generally of this child, of which I knew nothing, because I had been taught nothing. I was glad to escape after the most distressing viva voce examination I had ever had. Surely a course in physiology ought to begin with the laws of healthy living for adults and children, and if as I suspect we do not know much about these things, is it not time that definite research were undertaken?

But if we are to prevent a diseased condition arising, we must study and observe the natural history of that disease itself. It would be as sensible to study the natural history of a lion in a cage at the Zoo as that of consumption in a hospital ward. To understand the ætiology of a disease and therefore its prevention, and to some extent also its cure, the condition must be studied in the situation where it arises—in the homes of the people. I had the good fortune or misfortune to be brought up in a sheltered middle-class home. It was only when I went on extern duty and had to attend maternity cases in their own homes, that I began to understand how the poor had to exist, and could appreciate the reason for the high infantile mortality. Except on such duty the average medical student never sees disease in its natural setting, under the conditions which in many cases tend to produce it; and students who do their midwifery in hospital never get this advantage. If the medical student is to develop into a real "doctor," that is, teacher who gives instruction on the prevention of disease, he must see sick people in their homes. In my view an essential part of the training of a medical student should be the visiting of sick people in their homes in the company of the doctor who is attending them. This part of his education should take place within the last two years of medical study and preferably at the commencement of this period.

TRAINING OF SPECIALISTS.

It is time that we as a nation got rid of that most dangerous of all fallacies that any doctor is capable of undertaking any form of medical treatment. I know that in the case of emergency each one of us may have to do work for which we have had no training and of which we know little. We have simply to do our best. But unfortunately where no emergency exists work is undertaken by doctors with neither knowledge nor experience, and at present the public has no means of knowing whether the doctor who is in attendance has had efficient training for what he undertakes or not. The Medical Acts were passed so that the public may be able to distinguish between a man who has been trained as a doctor, and one who has not, and it ought to be equally easy to distinguish those who have had special training as physicians and surgeons from those who have only taken the course of study necessary for general practitioners. I should like to see a single State examination which all should be compelled to take before engaging in any form of practice and which would qualify for service as a general practitioner; and in addition, two other State examinations to be taken later by those who desire to do so, to indicate that the individual who satisfies the examiners has had the training necessary for a physician or surgeon. Other examinations might be taken to qualify for the various specialties. In each case evidence of having taken a special course of study and obtained special clinical experience would have to be produced before taking the examination.

It is a pathetic sight to see house surgeons and dressers who are going into general practice trying to learn the elements of minor surgery in a ward filled with gastrectomies and œsophagectomies, or to see a house physician and his clerks trying to become acquainted with the diagnosis and treatment of common ailments in a ward filled by diabetics, exophthalmics, and sufferers from rare diseases. And yet these very wards would be ideal for the training of those desirous of specialising as surgeons and physicians. The future general practitioner does not need to learn the details of complicated and difficult operations, and the treatment of rare medical affections. It would be nice of course if he knew all about such things, but there is so much that he must know about every-day conditions that he will spend his time to much greater advantage in the study of these.

But to whatever extent specialisation may develop in the future the diagnosis of disease must always remain largely in the hands of the general practitioner, and on his skill in the early recognition of diseased conditions the health of his patients will largely depend. Hence in the training of the general practitioner three sections of the subject of medicine will need to be especially stressed: *pathology*, because it is the basis of all scientific medicine; *diagnosis*, because the general practitioners must always form the first line of defence in the fight with disease; *prevention*, because it will be the duty of the practitioner of the future to keep his patients in good health as well as to treat them when unwell. It seems to me also that great care must be taken not to make the curriculum for the general practitioner's degree too extensive. The subject of medicine is so vast and no part of it is unimportant. While it is difficult to decide what can be safely left out it must be remembered that the average student can only absorb a certain amount of knowledge in five years, and that it is better to know a little well than a lot imperfectly. I would therefore make the curriculum limited and the standard high. A pass mark of 40 per cent. may be very nice for the student, but a patient needs more than 40 per cent. of correct diagnosis when he is ill.

A HOSPITAL MEMORIAL WING.—Last week Lady Maurice Fitzgerald opened a wing in Wexford County Hospital which has been provided by the Wexford Hunt Committee as a memorial to her daughter, Mrs. Lakin, who died from injuries sustained in the hunting field. The wing is intended for maternity patients, and a portion has been set aside for free treatment.

1931, an article advocating the use of the said alleged emedy without divulging your said interest therein. (5) By eeking by means of the said articles and circular and by a letter to Messrs. John Bell and Croyden, dated Nov. 11th, 1931, to induce registered medical practitioners to use in the reatment of their patients and to make themselves responsible for a medicament—namely, the said alleged remedy, of whose properties and/or action such practitioners were not fully informed. (6) By alleging in the said article in the *Medical World* that one of the cases therein mentioned was cured by means of the said alleged remedy, whereas he cure was in fact and to your knowledge effected by means of another and different remedy. And that in elation to the facts so alleged you have been guilty of nfamous conduct in a professional respect."

The hearing of this case took three days.

Mr. Nesfield appeared in answer to his notice, accompanied by Lord Erleigh, K.C., assisted by Mr. Arthur Ward, Counsel, instructed by Messrs. Bulcraig and Davis, Solicitors. Dr. William G. Macdonald appeared and was accompanied by Mr. Valentine Holmes, Counsel, instructed by Messrs. Bristows, Cooke, and Carpmael, Solicitors.

Mr. Holmes stated that he would not proceed with the fourth charge. Opening the case, he said that Dr. Macdonald, the complainant, had been for some years associated with a Russian medical man and biochemist, Dr. N. E. Ischlonsky, who had held certain high continental posts. Dr. Ischlonsky's work had been in recent years chiefly connected with the investigation of internal secretions. He had succeeded in making a preparation of embryonic tissue to which he had given the name "hormactan," and which had given good clinical results. Among the patients whom Dr. Ischlonsky had successfully treated with this preparation had been the wife and family of a Mr. Archibald Sharp; this gentleman had been so grateful and had formed such a high opinion of the value of the treatment that he had made repeated requests to be allowed to exploit it commercially; Dr. Ischlonsky had, however, refused to allow him to do so. In October, 1930, Mr. Sharp had asked Dr. Ischlonsky to grant an interview to Mr. Nesfield, who had asked him for a quantity of his preparation in order that he might treat two patients whom he had named. One of these was a man of some eminence in the State and in the City of London, who had been a member of the War Cabinet; Mr. Holmes disclosed his name in writing to the Council and requested that he might refer to this gentleman as "Mr. B." The Council granted this request. Dr. Ischlonsky had considered that he was safe in trusting a member of the medical profession with his preparation, and had therefore supplied the respondent with 15 ampoules for £120, stipulating that he should be given full clinical details of the treatment. The respondent had sent him details of a patient 6 ft. 2 in. in height, 16 st. in weight, and 52 years of age, of extremely powerful and muscular build. The blood pressure had been 135–140. As a result of the treatment the stature had increased by 1½ in. and the stance and sight had improved.

The complainant had in November, 1931, read a news article in the *Daily Express* referring in sensational terms to an article in the *Medical World* dated the same day, in which the respondent described the results of treatment by a preparation which he called vit alexin; the *Daily Express* article reproduced some of the clinical details, and among them was a case which corresponded exactly to the description of the patient whom Mr. Nesfield had informed Dr. Ischlonsky that he had treated with the hormactan supplied by the latter. Dr. Macdonald had secured the article in the *Medical World*, in which Case 1 was described as a case of general debility in a powerful man of 50 with a strong personality, who had been suffering from lassitude and decreased resistance to pneumococci, whose blood pressure had been 140 and his pulse-rate 60 and who could not read a newspaper without reading glasses. After 15 intramuscular injections of vit alexin at weekly intervals his skin had looked younger and his stature had increased by 1½ in. owing to his more erect stance and the increased tone of the intravertebral discs. Mr. Holmes pointed out that the wording of this case was practically the same as the wording of the clinical report Mr. Nesfield had sent to Dr. Ischlonsky. He pointed out that in both reports the words "the abdominal fullness disappearing" had occurred, and that in both the patient had been described as "finding himself reading a newspaper quite easily with distance glasses"; in both it had been said that "his mental quickness and perception had increased enormously."

Dr. Macdonald had then asked Dr. Ischlonsky if he might take the matter up; the latter had at first been unwilling to give his consent, thinking that to take any steps would be undignified, but he had later yielded to the complainant's persuasion. Complainant had examined the correspondence between Dr. Ischlonsky and Mr. Sharp, and found such striking resemblances in Mr. Sharp's letters to passages in the *Medical World* article that it was obvious that Mr. Sharp and Mr. Nesfield had been working together. Prosecuting his inquiries, he had come across an article in the French newspaper *Lu* which he had discovered was a literal translation of an article in the Hungarian paper *Az Est*; these articles described the wonderful properties of vit alexin and could only have emanated from the respondent.

Dealing with the charges in detail, he submitted that Mr. Sharp's letters could only have been written with the collaboration of the respondent and provided ample evidence that he was associated with Mr. Sharp in the campaign for attracting patients by advertisement. On the second charge, he said that this article had contained an account of two cases which had not appeared in the English articles and which, therefore, had presumably been supplied by the respondent. On the third charge, he pointed out that the mere fact that Mr. Nesfield had an agreement with the Vit Alexin Laboratories—Mr. Sharp's firm—to manufacture his preparation showed that he could not have disclosed it to the profession. On the fifth charge the same evidence was good, but Mr. Holmes withdrew the suggestion that respondent had enclosed a copy of the circular mentioned in charge 1 (*b*). Charge 6, which he had already dealt with, he submitted was the most serious of all.

Dr. William G. Macdonald testified to his statutory declaration. Cross-examined by Lord Erleigh, he said that a commercial man who tried to induce a doctor to enter into such an arrangement as Mr. Sharp had proposed to Dr. Ischlonsky would not meet with his approval. He was not suggesting that Mr. Nesfield had stolen Dr. Ischlonsky's invention, nor that Mr. Nesfield's preparation was in the nature of a quack remedy; he had no knowledge of it. His motive in complaining was to redress a slur on the profession. He admitted that the lay press often reproduced medical articles without the knowledge or consent of the author, but as the *Medical World* was published on Friday, the *Daily Express* could not have copied the article on the same day without prearrangement. He considered it significant that, whereas in the *Medical World* the age in the case of general debility was given as 50, in the *Daily Express* the age was given as 52. This patient had been described in one of Mr. Sharp's and would abstain from drink in the future. All the offences had been committed outside his district and none had been connected with any patient; no insured patient had ever complained. The conclusion of the inquiry—in view of all these facts—had been that the respondent would probably not offend again, and he had been put on probation for a year by the Minister. Mr. Gover had appeared before the Council in 1921, had been put on probation for a year, and had renewed his solemn promise to abstain from alcohol. From that day to this the Council had had no further information of any misdemeanour. In February last he had been found careering down the footway of a narrow road in the City, scattering pedestrians in all directions.

Sergeant Frank Watts, of the Metropolitan Police, testified to his arrest of Mr. Gover. He had found a large crowd, and a car moving on the footway. He had concluded that the driver was under the influence of drink, and had asked him to leave the car. The respondent had pleaded guilty through his counsel at the hearing on March 2nd. A charge of dangerous driving had been dismissed.

Cross-examined by Mr. Frampton, he said the doctor had been "a perfect gentleman" throughout and that there was only just room for two vehicles to pass in that thoroughfare; a careful driver might mount the pavement to pass another car. Re-examined, he said he had never seen a driver mount the pavement in that road before.

Mr. Frampton, addressing the Council, expressed respondent's profound regret that he had broken his undertaking. He asked if there were any statute of limitation for past offences and whether the punishment already received was not enough. He read a report from the police in 1922 giving Mr. Gover a very high character professionally. The doctor had taken a little alcohol, as he found it gave him great relief from colitis. He had been arrested immediately on leaving a club, just as he had started the car.

Mr. Frampton then called a number of medical and lay witnesses to Mr. Gover's character. They spoke enthusiastically of his work among the poor and of his reputation, and denied personal knowledge of any alcoholic habits.

After deliberation in camera the President announced that Mr. Gover would be called upon to appear again before the Council in May, 1933. The Council had found the charge proved, but hoped that Mr. Gover would abstain strictly from alcohol in future, and they had therefore postponed judgment.

A QUESTION OF CERTIFICATES.

The Case of Thomas Turnbull Tiplady, registered as of 102, Rye-hill, Newcastle-upon-Tyne, L.M.S.S.A. Lond. 1919, who had been summoned to appear before the Council on the following charge:—

"That being a registered medical practitioner (1) You did on three separate occasions—namely, on Nov. 22nd, 1919, June 7th, 1930, and July 8th, 1930, furnish certificates to the Ministry of Pensions relative to a claim by an ex-soldier John Ewart to a war pension (of which the second was on the official form M.P.A.O. 38) which were misleading and improper in that you gave a misleading and unreliable history of the post-war health of the said John Ewart from June, 1919, to the end of 1927; and (2) that on being questioned by the Ministry you alleged first that the certificates were based on your records, secondly that you had no record of the case, and thirdly that you had based them on Ewart's card which you had returned to the Insurance Committee, although no trace of the records can be found and the said Ewart had ceased to be insured in June, 1922. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The Ministry of Pensions, the complainants, were represented by Mr. Glover, and Dr. Tiplady by Mr. Davis, of Messrs. Bulcraig and Davis.

Mr. Glover explained the position of the Minister of Pensions and the difficulty of his task, which involved great reliance on the certificates of private practitioners. He handed in the documents. In October, 1929, Ewart had made an application in respect of pulmonary tuberculosis. During the course of an examination by a Ministry of Pensions officer he had said he had suffered from blood-spitting in previous years. Later he had furnished certificates from Dr. Tiplady stating that the respondent had attended Ewart in 1927 for bronchitis. After inquiry about the blood-spitting, Ewart had furnished a further certificate stating that he had in fact had hæmoptysis at this period. The Ministry had then asked for further details and respondent had replied that he had no records. As his previous certificate had been given "as from records," the Ministry had written again. Dr. Tiplady had replied that the certificate had been made from the panel records, but inquiry of the Ministry of Health had shown that Ewart had not been an insured person since 1922, and that no records existed.

In reply to Dr. Bone, Mr. Glover said that the first part of the first charge—viz., the certificate dated Nov. 22nd, 1919—was now withdrawn.

Mr. Davis called Dr. Tiplady, who testified that Ewart had been under his care for some years and had suffered from bronchitis. In 1919 and 1920 Ewart had worked, casually, for him, and thereafter had consulted him professionally. He had been seeing him every second or third day up to the end of 1927. He had not mentioned blood-spitting in the first certificate because he had had the sputum tested and no tubercle bacilli had been found. His June and July certificates were accurate to the best of his knowledge and ability. When he had written his earlier certificate he had had a record; at that time he had been working with his father, but on his father's death a number of records had been accidentally destroyed by a secretary; it was therefore true that when he wrote to the Ministry on the material date he had had no record. The third communication, saying that he had sent the record to the Insurance Committee, was a mistake, due to confusion of two patients with the same name.

Mr. Davis then addressed the Council, giving Dr. Tiplady's assurance that he had never intended to do anything misleading. The Council found that the charges were not proved to their satisfaction.

A CHARGE OF ADVERTISEMENT.

The Case of Vincent Blumhardt Nesfield, registered as of Sandhurst, Kent, M.R.C.S. Eng. 1901, L.R.C.P. Lond. 1901, who had been summoned to appear before the Council on the following charge:—

"That, being a registered medical practitioner, you have sought to attract to yourself patients or to promote your own professional advantage by means of all or any of the following acts: (1) By being associated with or employed by an individual and/or firm who to your knowledge sought to attract patients by advertising and canvassing through the medium of—(*a*) an article in the *Daily Express* of Nov. 6th, 1931, and (*b*) an undated commercial circular, both relating to an alleged remedy for diabetes, pneumonia, blood poisoning, high blood pressure, epilepsy, mental incapacity, neurasthenia, general debility and other human ailments, known as vit alexin. (2) By advertising and canvassing through the medium of an interview given to and/or an article published in the newspaper *Az Est* of Buda-Pest and/or the newspaper *Lu* of Paris (Jan. 29th, 1932) relating to the said alleged remedy. (3) By keeping secret from the medical profession and from the public the formula or process for the production of the said alleged remedy, and being interested in its commercialisation as a secret remedy. (4) By publishing in the *Medical World* of the said Nov. 6th, was not the one described to Dr. Ischlonsky. If he had known Sharp was organising this campaign, he would have stopped it.

Cross-examined, he said he had mentioned no names to Dr. Ischlonsky. Mr. Sharp had been Dr. Ischlonsky's business agent, and respondent had obtained the ampoules through him. The price was £150, but he had obtained a rebate of £30, which Dr. Ischlonsky offered for every patient he introduced.

He affirmed that he had told Dr. Ischlonsky frankly that he had been interested in hormones. He had considered obtaining a second series of ampoules. He thought the description of "tout" rather strong for Mr. Sharp; he was familiar with travellers from drug firms. Asked whether he condemned Mr. Sharp's conduct in acting as agent for Dr. Ischlonsky, he said that he could not criticise a foreign doctor; it was "all a matter of regulations." He had had no conversation with Mr. Sharp about the handling by the latter of the commercial rights of vit alexin until some time in the summer of 1931. Mr. Sharp had then asked whether he could "run" the preparation for respondent, who had replied that he was not very anxious for anybody to run it, because he had only been making enough for himself. At a subsequent interview, however, in the autumn, he had said that he supposed that somebody would have to do it as he could not. Mr. Sharp was to run the preparation and "do what was right" by the respondent, who had informed him that he was not the principal. He had not made any arrangement before the date of Sharp's letter to Dr. Kousnetzoff, and knew nothing about the letter. Mr. Sharp had known that respondent was writing an article for a medical journal; the respondent had shown it to him at his residence at Sandhurst in the summer. Mr. Sharp had read a little of it, but without comprehension, and had not been given a copy. He had seen it again in respondent's room in London and had thought it "rather a poor article."

In answer to the Legal Assessor, respondent said that Mr. Sharp might have had the article for an appreciable time, for respondent's brother, who had been in close connexion with Mr. Sharp, had had it in his possession. He had not made any inquiry about Mr. Sharp's prospective methods. Questioned on the reference to the "elixir of life," which had appeared both in his article and in one of Mr. Sharp's letters, he said that Mr. Sharp might have seen the phrase in his article. He agreed that the writer of the letter must have copied matter from the article. It was not, however, true that he and Mr. Sharp had worked throughout in coöperation. He had not known that Mr. Sharp was writing to Dr. Kousnetzoff and others the letters he had written, or he would have had no further communication with him. The method was thoroughly "awful." Respondent was very bad at business; he had left it to Mr. Sharp, stipulating that he should be shown letters. He described as "not nice" Mr. Sharp's remarks about press propaganda and such matters. He had asked Mr. Sharp why he had used the name "Hormogen Laboratories," and had accepted the explanation that it was a business method. The name of the preparation had been changed from hormogen to vit alexin at about that time, and Mr. Sharp had also altered the letterhead. He accepted Mr. Sharp's use of Miss Saunders's name on the explanation that two names were needed on a piece of paper. He did not know when the partnership had started. She was receiving 5s. a week from it, and had refused to take more. Mr. Sharp was, respondent supposed, to take the whole of the rest of the profits. He had chosen Mr. Sharp because the latter had approached him first. Respondent had insisted on being in charge of the manufacture until the company was formed. He had taught Miss Saunders, and when the preparation was manufactured she had sent it to Mr. Sharp. He had charged Mr. Sharp nothing for it; Mr. Sharp had paid for the raw material and the 50 or 60 people employed in collecting it all over the country; it cost £100 to £200 a week, and could only be obtained at certain times of the year. Altogether Mr. Sharp had paid about £2000 for it. This would have made about 5000 1 c.cm. ampoules. In answer to the Legal Assessor, he said that the weekly output had been about 48 ampoules. Miss Saunders and "Mr. B." were the only people who knew the formula. Half the profits went to the firm, and the expenses were found by Mr. Sharp. In answer to Mr. Holmes, he said that he was glad to say that Miss Saunders had had no chemical training, but that the manufacture was not complicated, though absolute attention had to be paid to certain details, as in a Wassermann test and staining a slide. Explaining his description of the process as too "complicated, delicate, and intricate" for publication, in answer to the charge of concealment, and its divergence from his present answer, he said that he had been referring to the actual technique of preparation, which deserved that description.

Questioned about the company's assets, he said that the company, in January this year, had become the owner of a very expensive laboratory; this, he said, ought to have been mentioned in the agreement of sale. It had been paid for by Mr. Sharp, who should in time have charged it to the company. Mr. Sharp was a very wealthy man. He had purchased a suitable unoccupied house in Battle and turned it into a laboratory at the cost of about £1000. The house, of bungalow type, had cost £900, and the conversion £200 or more.

It would be very wrong, respondent said, for him to publish the details of the process now that Mr. Sharp had spent all this money. He did not remember how the article had been sent to the *Medical World*. He had sent it first to the *Practitioner* and then to the *Clinical Journal*; it had come back, and he must have then sent it to the *Medical World*. He had written asking them if they would like to publish it, and they had replied that they would. He had not known when it was to be published until he had seen it in the journal. He did not know how Mr. Sharp had known about it on Oct. 8th or 13th, when he had predicted to Mr. Douglas Walker and Dr. Kousnetzoff that it would be published on Nov. 6th, after the General Election, simultaneously with the article in the *Daily Express*. He thought that Mr. Sharp had made a pure guess, and suggested that the *Daily Express* had seen his article in the *Medical World* the day before its publishing date.

The discrepancy of age must, he said, have been an ordinary inaccuracy. He could not remember the right age; he had no case records. He had some "rather feeble" records, in tiny notebooks, of the patients he had treated with hormactan and hormogen; he kept them entirely in his head. The details of cases in the *Medical World* had been written entirely from memory. When his material had got bigger—over about 40 cases—he had started keeping notes, but the early patients were all persons intimately known to him. They lived in the same small village, and he had seen them daily for years, and knew every detail of them. He kept notes of consultations.

letters to Dr. Ischlonsky as a man of 50, but Mr. Nesfield had given the correct age in a letter as 52. Mr. Nesfield, therefore, must be the source of the information in the *Daily Express*.

Lord Erleigh: You have been busy!—I have examined this with care.

Asked what evidence he had of Mr. Nesfield's connexion with the advertising campaign, the complainant replied that he knew of it only by inference, saying that, after all, the whole of diagnosis was inference. It was plain from Mr. Sharp's letters and his association with Mr. Nesfield that if there had been no collaboration there would have been no publicity. The continental article referred to a case observed in "a large public assistance hospital," a class of hospitals which only existed in Britain, and of which no Hungarian reporter could have known by himself; only a medical man familiar with institutions in this country could have given this information. The complainant had ascertained from a Hungarian representative of the paper *Az Est* in London that the French article was a true translation of the Hungarian. Lord Erleigh put to the witness an article from a German paper concerning vit alexin, in which the phrase occurred "one of the best-known London hospitals confirm." The witness suggested that probably the same man had written both, although the "public assistance hospital" had not been mentioned. He did not know that this article had come from a Berlin paper, and therefore must, as Lord Erleigh put it, have "gone the rounds." The witness said that he himself did not profit by the success of hormactan, and did not regard vit alexin as a rival. The "Vit Alexin Laboratories," the address at 27, Walbrook, consisted of two rooms only, in which no manufacture could be carried on. The interest of Mr. Nesfield in the commercialisation of vit alexin was, he said, another matter of inference from the fact that Mr. Sharp, in letters to an assistant of Dr. Ischlonsky's called Dr. A. Kousnetzoff, had referred to his association with Mr. Nesfield and had made an offer of shares in the concern. Vit alexin was sold by chemists to the medical profession. He had written to "Mr. B." and had obtained an interview with him in order to ascertain whether he was the man referred to.

Re-examined, he stated that he had made notes of that conversation. (Mr. Holmes read the note, which was handed in.) "Mr. B." had stated that Case 1 in the *Medical World* article did not correspond to his case, and had suggested that an interview would smooth things over.

In reply to a question by Dr. J. Lorrain Smith, witness stated that the French article contained the phrase "hôpital d'assistance publique."

Dr. N. E. Ischlonsky, examined, corroborated Dr. Macdonald's evidence. This closed the case for the complainant.

Defence.

Lord Erleigh then called "Mr. B.," who testified that he had known respondent for about seven and a half years. He was himself very much interested in scientific research; he held the degree of M.D. Edin., and had early in his life been interested in the ductless glands; 25 years ago he had been awarded a gold medal for a thesis on the subject. He had worked in this field with respondent, who had done most of the experiments on vit alexin with his knowledge and frequently at his expense. He had supplied the money and also the body on which to experiment! Respondent had a practice near his residence and a small cottage hospital, and did much practice without remuneration. A friend had informed witness of hormactan, and he had asked respondent to obtain some for him. He had paid £120 for 15 ampoules; it had been wanted for experiment, not for treatment. He gave details of the results of the experiments, which had taken different forms. He had supplied all the material for Mr. Nesfield's letter to Dr. Ischlonsky; the details represented accurately the results which had occurred in himself. At the interview with Dr. Macdonald he had stated definitely that the *Medical World* Case 1 did not refer to himself; he testified that he knew the name of the man to whom it did refer, and wrote it down for the information of the Council. The man was a personal friend, and would have come forward if he had not had to leave for South Africa just before the hearing.

Lord Erleigh then called Mr. Nesfield, who gave details of his career. He had obtained the Fellowship of the Royal College of Surgeons at the age of 23 and had invented the chlorine sterilisation of drinking water. His standard text-book on plague was still used in all medical schools in India. He ran a cottage hospital at his own expense, and his income, including his pension, amounted to about £900. He had been interested in the ductless glands for 18 years. He had collaborated with "Mr. B." for about seven years, and they had worked independently and compared notes. He had first treated patients with a preparation kindred to vit alexin about the end of 1928. He had first heard of hormactan from "Mr. B." in the autumn of 1930, when that gentleman had sent him a circular describing it; on the same day Mr. Sharp had called on him for the first time and told him of it, and also his own brother had asked him by telephone if he had heard of it. His brother was a friend of Mr. Sharp. He had administered two doses to "Mr. B." but then had fallen ill. In 1931 he had started manufacturing vit alexin, which he had previously called hormogen, in his laboratory in Sandhurst, instructing Miss Saunders, his wife's companion, in its preparation. She had had two girls under her. He had ceased to play an active part in September, 1931. The laboratory was now in Battle, Sussex. The company had been formed in February, 1932, half the shares being held by Miss Saunders as a trustee for respondent's wife and four children. There was no prospect of profit, and he was £250 out of pocket. He was not a shareholder. The article in the *Medical World* fairly represented the position. He had given no information towards the article in the *Daily Express*. A representative of the paper had called on him with the *Medical World* article, and he had said: "You mustn't put that in; if you do, I shall get into a terrible row." The representative had, however, declined to refrain from publishing it. A newspaper could get the *Medical World* the day before the public could. He had not drawn up the offending circular. Mr. Sharp had written it entirely from material in the article and respondent had never seen it. He had remonstrated furiously with Mr. Sharp, who had broken faith with him in printing anything without his knowledge, and the circular had at once been recalled. Questions in letters from doctors had been answered and the value of vit alexin to the particular patient discussed; lay persons writing had all been referred to their doctors. He knew nothing about the continental articles. He held that he would have been wrong to disclose the formula; if he had, England would have been swamped with foreign preparations of the kind. He believed in it as a wonderful remedy. The case in the *Medical World* patient's head to disengage the pole from the sling, had turned away in watching the direction of the pole which he was removing; simultaneously the attention of the probationer nurse, who was at the patient's feet, happened to be momentarily distracted, while the anæsthetist had turned his back to pick up certain apparatus. The jury, in returning a verdict of the cause of death as already stated, added a recommendation that an additional nurse or attendant should be at the side of the patient in future.

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MEDICINE AND THE LAW.

Sale of Poisons in Chemist's Shop.

THE Pharmaceutical Society continues its battle for the proper enforcement of the law relating to the sale of poisons. Under Section 3 of the Poisons and Pharmacy Act, 1908, a duly registered pharmaceutical chemist commits an offence unless, in all the premises where he carries on business as a chemist, the business is "bona fide conducted by himself or some other duly registered pharmaceutical chemist or chemist or druggist." The Society brought an action under this Section against a Wendover chemist who, for 42 hours in the week, was engaged in work a mile away at Halton Camp. During the period of his absence he left an unqualified assistant in charge of the Wendover shop, who sold the public any goods that might be asked for. The assistant was proved to have sold lysol on three separate occasions. The county court judge at Aylesbury, before whom the proceedings for a penalty were taken, held that Section 3 had not in the circumstances been infringed. The learned judge felt himself bound by the decision in Watkinson's case last year. That was a case where sale of poisons had taken place by means of an automatic machine outside the chemist's shop; it was there held that, as a matter of fact, the automatic machine was part of the premises where the business was carried on, but Mr. Justice Talbot took the view that there had been no offence against Section 3, because no unqualified assistant had been employed in effecting the sale through the machine. On appeal from the Aylesbury County Court Sir Leslie Scott, on behalf of the Society, sought to distinguish the Wendover case from the automatic machine case; he argued that the word "conducted" connoted some more physical supervision of the business by the chemist himself than the words "carried on." The King's Bench Division dismissed the appeal, but gave leave for further appeal. There is indeed much to be said for the argument that the Pharmacy Acts were intended to give the public a genuine protection from the dangers of sale by unqualified persons, and therefore that the control by the duly qualified and registered chemist must be real and not merely nominal.

Unusual Accident in Hospital.

An unfortunate accident in a hospital operating theatre was investigated during an inquest at Northampton last month in a case where death was found to have been due to acute meningitis. A patient was about to be operated upon for mastoid abscess. The anæsthetic had been administered and the patient had been lifted from the trolley to the operating table, when somehow the body slipped from the table and fell to the floor. A post-mortem examination showed that the inflammation of the brain was so acute that there was no hope for the patient, fall or no fall; there was some evidence that the effects of the fall might in fact have been mitigated by the anæsthetic. A legal representative appearing at the inquest on behalf of the hospital authorities, who was permitted the by no means universal privilege of addressing the coroner's jury, urged that there was no evidence of negligence. The coroner, in summing up, said the fall should not have occurred. Apparently the porter, standing at the patient's head to disengage the pole from the sling, had turned away in watching the direction of the pole which he was removing; simultaneously the attention of the probationer nurse, who was at the patient's feet, happened to be momentarily distracted, while the anæsthetist had turned his back to pick up certain apparatus. The jury, in returning a verdict of the cause of death as already stated, added a recommendation that an additional nurse or attendant should be at the side of the patient in future.

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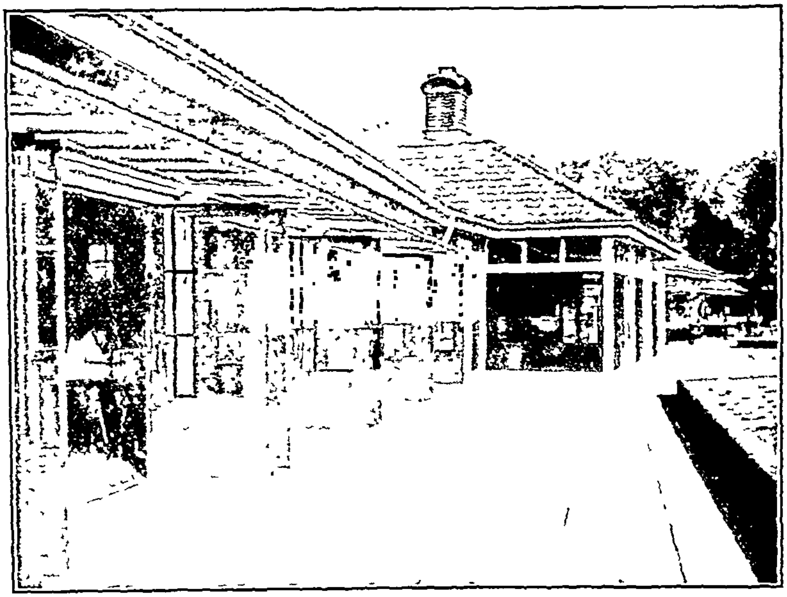
THE Pharmaceutical Society continues its battle for the proper enforcement of the law relating to the sale of poisons. Under Section 3 of the Poisons and Pharmacy Act, 1908, a duly registered pharmaceutical chemist commits an offence unless, in all the premises where he carries on business as a chemist, the business is "bona fide conducted by himself or some other duly registered pharmaceutical chemist or chemist or druggist." The Society brought an action under this Section against a Wendover chemist who, for 42 hours in the week, was engaged in work a mile away at Halton Camp. During the period of his absence he left an unqualified assistant in charge of the Wendover shop, who sold the public any goods that might be asked for. The assistant was proved to have sold lysol on three separate occasions. The county court judge at Aylesbury, before whom the proceedings for a penalty were taken, held that Section 3 had not in the circumstances been infringed. The learned judge felt himself bound by the decision in Watkinson's case last year. That was a case where sale of poisons had taken place by means of an automatic machine outside the chemist's shop; it was there held that, as a matter of fact, the automatic machine was part of the premises where the business was carried on, but Mr. Justice Talbot took the view that there had been no offence against Section 3, because no unqualified assistant had been employed in effecting the sale through the machine. On appeal from the Aylesbury County Court Sir Leslie Scott, on behalf of the Society, sought to distinguish the Wendover case from the automatic machine case; he argued that the word "conducted" connoted some more physical supervision of the business by the chemist himself than the words "carried on." The King's Bench Division dismissed the appeal, but gave leave for further appeal. There is indeed much to be said for the argument that the Pharmacy Acts were intended to give the public a genuine protection from the dangers of sale by unqualified persons, and therefore that the control by the duly qualified and registered chemist must be real and not merely nominal.

Unusual Accident in Hospital.

An unfortunate accident in a hospital operating theatre was investigated during an inquest at Northampton last month in a case where death was found to have been due to acute meningitis. A patient was about to be operated upon for mastoid abscess. The anæsthetic had been administered and the patient had been lifted from the trolley to the operating table, when somehow the body slipped from the table and fell to the floor. A post-mortem examination showed that the inflammation of the brain was so acute that there was no hope for the patient, fall or no fall; there was some evidence that the effects of the fall might in fact have been mitigated by the anæsthetic. A legal representative appearing at the inquest on behalf of the hospital authorities, who was permitted the by no means universal privilege of addressing the coroner's jury, urged that there was no evidence of negligence. The coroner, in summing up, said the fall should not have occurred. Apparently the porter, standing at the

A CHILDREN'S HOSPITAL PAVILION.

NEW BUILDINGS AT TADWORTH COURT.

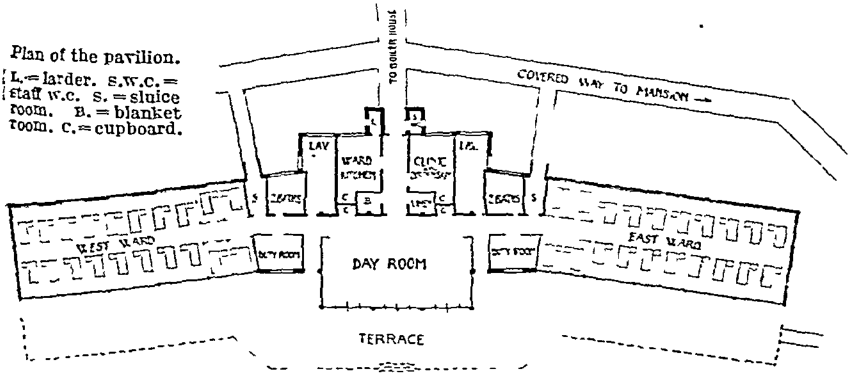


The new pavilion, from the terrace.

[Photograph by S. W. Newbery.

THE accompanying illustrations represent the first of 12 proposed open-air pavilions to be erected in connexion with the extension of the branch hospital at Tadworth Court of the Hospital for Sick Children, Great Ormond-street, London. It was opened by the Princess Royal last Monday.

The pavilions will be situated on vacant land of approximately 50 acres and will be spaced in the shape of a fan, with south aspect, and on the main axial road, which will give access by covered ways to all pavilions. The general lay-out provides for a central service kitchen, and near to the main road will be the power house, laundry, &c. The scheme also provides for a nurses' home and recreation room, chapel, pathological section, isolation ward, operating theatre, and electrical treatment ward.



Plan of the pavilion.

L.=larder. S.W.C.=staff W.C. S.=sluice room. B.=blanket room. C.=cupboard.

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Each pavilion is provided with broad terraces paved with stone, to enable cots to be wheeled out and to give a dry playing space for children who are able to get about.

The lighting of the wards is concealed in the ceiling and special pilot lights are provided for night use. The building is heated by low pressure steam, and a special feature is the concealed heat-ray panels in the ceilings and walls, the former giving an effect of comfort heat, and the latter direct heat at approximately floor level. By this means no floor space is lost, and there are no unsightly dust-collecting radiators. A secondary means of heating is provided by gas radiators in the event of an emergency.

The floor coverings of the wards and the day room are of Canadian maple, with an oak margin against the south front to allow for driving rains when the folding doors are open. Elsewhere floors are laid with marble terrazzo, laid in situ. Fire hydrants, fire-fighting appliances, and alarm bells, electric clocks and telephones, are all installed.

The architect for the scheme is Mr. H. Courtenay Constantine, F.R.I.B.A., of 82, Mortimer-street, London, W.

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UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

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Mr. WALTER ROCH, the hon. treasurer, spoke of difficulties which had arisen quite recently, and would probably entail an additional capital expenditure of £700 before the Institute could move from its premises in Tavistock-square, of which the lease was expiring, to the more spacious quarters acquired in Torrington-square. Of the annual expenditure of £5000, about £2000 only came from patients' fees.

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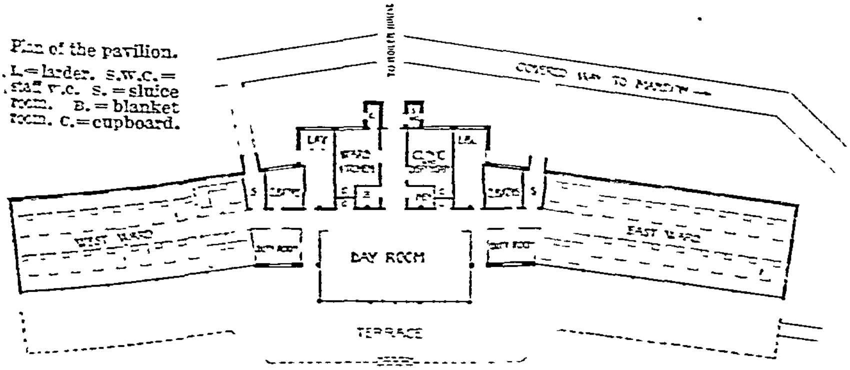

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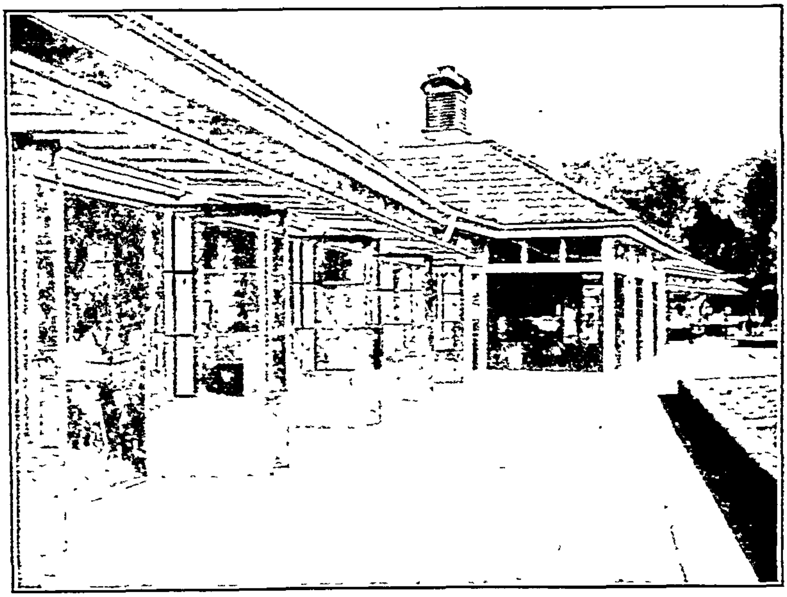

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ing for differences in the standard of living, there is really no wide discrepancy in professional incomes in the two countries." Nor can they trace it to differences in the methods by which the doctors are remunerated. The really important matter is that in Germany the doctors are under lay control, while in Great Britain the control of the medical services is exercised to a large extent by the doctors themselves.

> "The demand for medical representation on the administrative side hits at the heart of the matter. There is nothing so highly mystical about the economic and social problems involved as to bar such representation. On the contrary, once the cash and service sides are separated the rest is an extremely simple problem in administration.
>
> "British and French experience, and the judgment of recent official investigators from countries contemplating the introduction of health insurance, gives sound reasons for the conclusion that every step in the direction of separation of these functions and increasing the power of the medical professions in the control of insurance institutions has brought greater satisfaction on the part of patients, public, and practitioners."

The conclusions stated in the two paragraphs quoted above are the result of a penetrating analysis of the methods by which insurance medical services are administered. This analysis, and indeed the whole report, may confidently be recommended to all who are concerned with health insurance, either as practitioners, administrators, or interested members of the general public.

Benefits of Insured Women.

A deputation of women's organisations received at the Ministry of Health on May 25th maintained that the proposal in the National Health Insurance Bill to reduce the benefits of insured women, especially those of married women, was contrary to the basic principle of a State insurance measure, which should involve the pooling of the resources of the scheme for the benefit of all. Whilst admitting that the claims of the women were high, they were not so high as in the case of large groups of insured men against whom no discrimination was contemplated in the Bill, and it was unfair to select one section for a lowering of benefits. The higher sickness rates of women were largely due to their low rates of wages, which in turn were due to the legal and other disadvantages under which so many of them carried on their work. The most equitable way to deal with the position was, not by differentiating women from men, but by equalising the position of men and women; they suggested that there might be a partial pooling of future surpluses, and that the central fund might be strengthened and the powers in respect of the fund increased, or that some other form of reorganisation was necessary. The Minister of Health in reorganising the scheme should give consideration not only to the financial aspects but to the interests of public health.

In reply, Mr. Ernest Brown, Parliamentary Secretary to the Ministry, said that differentiation between men and women was a principle which had been in force since the inception of the scheme in 1911. If the deficiency on the women's side had been met by adjusting men's benefits as well as women's, the aggregate hardship to married women would be much greater, since the vast majority of them, being uninsured, would be affected by any change in their husbands' cash benefits, whereas only the minority of married women—namely, those who were insured (a sixth of the whole) were affected by the proposals in the Bill. He was afraid that the central fund was not nearly large enough to meet the losses arising from the claims of women; a further levy to augment the fund would only increase the number of societies in deficiency. In those circumstances, he said, the only practical alternative to changing the rates of women's benefits was to raise women's contributions by not less than 1½*d.* a week, and the Government had decided that this was an extra burden which they could not ask Parliament to impose.

Points from Committees.

At a meeting of the LONDON INSURANCE COMMITTEE on May 26th Lady Stewart made an appeal to support the claim of women not to have their sickness benefit reduced. There was, however, not much support for this contention, as it was stated that it was largely to protect the contributions of single women—some four millions in number—against the excessive claims of the married—about one million—that the Bill had been introduced. It was suggested that the part-time married woman worker was the chief cause of the heavy sickness claims. The Committee refused by a large majority to express regret at the proposed reduction.

The Committee discussed the question of cuts in the salaries of its staff, and referred the matter back to their general purposes committee, with the suggestion that it was probably better to make some cuts themselves rather than have a cut imposed.

The chairman of the pharmaceutical subcommittee gave a word of praise to the chemists in the area on the accuracy of their dispensing. Of the last 61 tests made by taking prescriptions to chemists and having the results analysed, it was only found necessary, he said, to investigate further in two cases.

The ointment box, cardboard or chip, is liable to give trouble to chemists. Two cases were referred back by the Ministry to the Committee with the suggestion that fines should be imposed for failure to supply 2 oz. and 1 oz. of ointment as required. The chemists had filled a reputed 2 oz./1 oz. box, but the weight was deficient. The regulations provide that the ointment ordered should be weighed and placed in a suitable vessel, and it was decided to inflict fines as suggested.

BIRMINGHAM insurance practitioners are not all business men. Witness two items on the May agenda of the insurance committee:—

> "To approve issue of cheques amounting to £30 13*s.* 7*d.* to insurance practitioner and a chemist in the place of cheques for a similar amount which had been lost. . . ."
>
> "To cancel cheques amounting to £740 6*s.* 8*d.* issued to general practitioners and not presented for payment within three months of issue. . . ."

From figures given it appears that for two recent quarters the number of medical cards issued exceeded the doctors' acceptances by more than 7500, with a total of 20,000 odd. The difference is presumably due to insured persons not taking the cards to doctors for acceptance upon receipt, and possibly to some delay on the part of the doctors in sending up new medical cards when received.

The number of insured persons in the Birmingham area on Jan. 1st, 1932, was 450,166; on April 1st, 453,843.

The CHESHIRE PANEL COMMITTEE had referred to them by the insurance committee a curious claim by a doctor for emergency treatment fees on account of a patient on his list who was attended by himself in an adjacent area, the doctor being also on the panel for that area. The Committee at first declined to pay these emergency fees, and consulted the Insurance Acts Committee. The reply received was that emergency attendance on a doctor's own patient outside the committee's area, but in an area in which the doctor is also on the panel, should be paid for.

During the last financial year a sum of £1056 was received by voluntary levy on insurance doctors, and donations were made as follow: Royal Medical Benevolent Fund and Epsom College, each £52 10*s.*; National Insurance Defence Fund, £200.

At a recent meeting of this Committee the question of a general pension and insurance scheme for insurance

PANEL AND CONTRACT PRACTICE

Health Insurance: An American View.

IN 1930 the American Dental Association decided to make, with the assistance of the American College of Dentists, an investigation into the operation of health insurance in Europe, the object being to produce an impartial study that would "assist in the appraisal of health insurance as a device for meeting the costs of medical care for the underpaid section of American society." The Association were fortunate in securing the services of two highly competent investigators, Mr. A. M. Simons and Dr. Nathan Sinai, who began their work by a study of the printed material available in the United States, and that which could most easily be obtained from abroad, and continued by personal inquiries in England, Scotland, Germany, France, Belgium, Denmark, Austria, Switzerland, and Russia. The result of the investigation is a masterly document—informative, critical, and very readable—which cannot fail to interest not only medical and dental practitioners, but also all persons who care for public health progress.[1] Though the report is informative to a high degree its main concern is not to describe insurance institutions and regulations, but to focus attention "upon the way in which insurance operates and the effects of that operation upon the human beings involved."

The authors maintain that compulsory health insurance, like other forms of social insurance, is a result of industrialisation and low wages; that "the dominant motive in the establishment of every system of health or sickness insurance is the relief of poverty, not the preservation of public health." Health insurance in its inception had for its chief object the payment of cash benefits to compensate the incapacitated worker for the loss of wages. It was a way of inducing the working people to save up for a rainy day, and it was administered by persons whose chief interest was in the economic rather than in the health aspects of social reform. To-day the cash benefits are regarded as relatively less important than the provision of medical care; the chief object is to deal effectively with sickness and to restore lost earning power to the disabled insured workers. Restoration rather than compensation is the modern note, and it finds expression in the provision of medical services that tend continually to increase in range and cost.

GROWING INFLUENCE OF MEDICAL PROFESSION.

This development naturally enhances the importance of the doctors' function in health insurance. And health insurance takes a more prominent part in the doctors' professional activities, for the proportion of the population receiving medical treatment under health insurance schemes tends to increase, not only by additions to the list of insurable occupations, but also by the extension of medical benefit to the dependants of the insured persons. When compulsory insurance was introduced into Germany in 1884 it included not more than about 10 per cent. of the population: now nearly two-thirds of the population receive their medical treatment through the insurance societies. At first, the insurance law seemed of small consequence to the doctors in Germany, who in any case had no organisation which would have enabled them to secure any modification in the provisions of the law affecting medical services. But as the field of compulsory health insurance steadily extended the medical profession became more and more involved with the insurance societies, and though professional organisations were formed they were unable to secure radical alterations in the scheme. Consequently a spirit of antagonism between the profession and the societies developed which has had unfortunate results on the insurance systems.

But with the introduction of the National Insurance Bill into the House of Commons in 1911 a new era began in the history of health insurance. The Bill in its original form reproduced the objectionable features of the German system, but it did not long remain in its original form. Mr. Lloyd George came up against the British Medical Association, at whose insistence the Bill was altered in the things that really mattered to the doctors. It is doubtful if the leaders of the Association at that time fully appreciated the historic importance or the implications of the victory they undoubtedly won for the medical profession. Their example has been followed in other countries. The French insurance law, which established the latest of the European health insurance schemes, was profoundly altered to meet the demands of the medical profession, who in a few months raised a fighting fund of over a million francs and set in motion a wide campaign of public education on the questions of medical service. If compulsory health insurance is introduced into countries, such as the United States, in which it has not yet been established, it will be strange indeed if the doctors allow themselves to be taken unawares.

SEPARATION OF CASH FROM MEDICAL BENEFITS.

According to this report the chief effect of the influence that the medical profession has exercised on health insurance is the separation of the cash benefit side of insurance from the medical services. This has not been effected in Germany, where the insurance societies (*Krankenkassen*) not only collect the contributions and pay the cash benefits, but also employ and control the insurance doctors. In Great Britain the insurance societies were placed in a similar position in the original draft of the Insurance Bill, but the Government were obliged by the opposition of the British Medical Association to create a new local body, the Insurance Committee, to administer medical benefit. In the French insurance scheme the separation of cash benefits and medical service is carried still further, for the insurance doctor is under no contract with a lay administrative body, but is paid direct by his insured patients. The control of medical service is exercised, except in very unusual circumstances, by the medical profession.

The report traces the results that follow upon the separation of the cash benefits from the medical service, the most important being the participation of the medical profession in the administration of the insurance scheme. The report explains in detail what this implies. To begin with, it gives a medical service that works in sympathy with the scheme. These American observers find the German and British health insurance schemes represent "extremes in the degree of medical satisfaction with the position of the profession in the scheme. German physicians are among the most loud in their complaints, and the British apparently are the most satisfied." They cannot attribute this difference of attitude to differences in remuneration, for they find that "allow-cases, a number equivalent to half the births. A postnatal clinic, instituted in 1929, was attended by 103 mothers four or five weeks after delivery, as compared with 65 in the previous year, and arrangements were made to secure the treatment of the large number of abnormalities found. The special efforts to supervise the pre-school child included a full examination of 227 children aged 3 years, 66 per cent. of whom had defects requiring treatment.

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[1] The Way of Health Insurance. By A. M. Simons and Nathan Sinai. Publications of the Committee on the Study of Dental Practice of the American Dental Association. No. 6. University of Chicago Press. 1932. Pp. 215. $2.

Bermondsey.

Dr. D. M. Connan reports that the infant mortality-rate of this metropolitan borough was the lowest recorded and that the cases of diphtheria and scarlet fever were the lowest for 15 and 13 years respectively. Only 15 patients were immunised at the Schick clinic. The general death-rate was lower than in 1930 (13·1) and the pulmonary tuberculosis rate of 1·03 was equal to the lowest recorded—viz., in 1929. The lady almoner makes assessments and collects payments in respect of patients sent to the L.C.C. sanatoriums. In 1931 £400 was collected on 206 assessments. She also found occupation for a number of discharged patients and ran a weekly handicraft class; and her other activities included arranging for convalescent homes for non-tuberculous patients and for health lectures in the schools. The solarium was attended by 677 new cases. The conditions which benefited most were rickets, malnutrition, and debility; while chronic rheumatics obtained decided relief, in the absence of better methods. The group system of irradiation was introduced for schoolchildren. The children march round circles irradiated by mercury-vapour and radiant heat lamps to the music of a gramophone and this is followed by simple physical exercises. Since 1924 the borough council have sent 24 tuberculous patients to Leysin. Of these, 12 are "well and at work"; 4 are "keeping well"; 5 are still at Leysin; 2 have left Bermondsey; and 1 has died from tuberculous meningitis. There were 50 notifications of puerperal fever and pyrexia and the available facilities were used as follows: 41 were admitted to hospital, for 2 a consultant was provided, and for 2 a nurse, whilst there was no application for bacteriological examination.

A full account is given of Bermondsey's housing problem and the efforts being made for its solution. Most of the inhabitants are manual workers and much of the labour is casual in this riverside borough. The houses of former well-to-do residents have been split up into tenements without proper provision for cooking, washing, &c. Many of the 4-, 5-, and 6-roomed cottages, the prevailing type, are occupied by two or more families, and it is difficult to decide how widely to apply registration under the by-laws for houses-let-in-lodgings. There are blocks of flats, including 4000 separate tenements, one or two of the older blocks being "very far from satisfactory." Most of the house property is from 70 to 150 years old and a considerable proportion is worn out. Rents range from 5*s.* per week for one room to 35*s.* for six rooms. This rent is high, says Dr. Connan, considering that the average wage in the borough is from 42*s.* to 45*s.*; and it is often exorbitant in view of the accommodation provided. Since 1919 the Council have had in hand unhealthy areas involving about 650 houses and over 4000 persons, and have rehoused 350 families; the L.C.C. have erected 151 flats; and private enterprise has provided 22 houses and 58 flats. In their five-year programme the Council hope to deal with 22 additional small "clearance" areas and some 40 houses by demolition orders leaving "improvement" areas to the L.C.C. Dr. Connan believes that every available site has been considered by the Housing Committee. The overcrowded families desiring local accommodation number 1180 and those willing to move to L.C.C. estates 295. When a family moves to a L.C.C. estate, efforts are made to prevent overcrowding in the vacated house, but difficulties arise when unemployment causes the moved family to return and overcrowd their relatives in the borough.

Dr. Connan notes a considerable increase in the amount of food, especially bacon, arriving at the borough wharves, necessitating much night inspection. There is a sale for Grade A (T.T) milk, but the price of Certified milk is prohibitive and Dr. Connan does not favour the steadily increasing sale for sterilised milk.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 21ST, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 56 (last week 76); scarlet fever, 1404; diphtheria, 671; enteric fever, 29; acute pneumonia (primary or influenzal), 918; puerperal fever, 45; puerperal pyrexia, 126; cerebro-spinal fever, 46; acute poliomyelitis, 1; encephalitis lethargica, 14; dysentery, 14; ophthalmia neonatorum, 80. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 24th–25th was as follows: Small-pox, 89 under treatment, 5 under observation (last week 116 and 4 respectively); scarlet fever, 1549; diphtheria, 1319; enteric fever, 7; measles, 2550; whooping-cough, 399; puerperal fever, 16 (plus 5 babies); encephalitis lethargica, 228; poliomyelitis, 3; "other diseases," 86. At St. Margaret's Hospital there were 15 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 84 (37) from measles, 9 (6) from scarlet fever, 43 (15) from whooping-cough, 26 (6) from diphtheria, 42 (10) from diarrhœa and enteritis under two years, and 42 (5) from influenza. The figures in parentheses are those for London itself.

Manchester reported the only fatal case of enteric fever. Liverpool reported 16 deaths from measles, Walthamstow, Leeds, and Manchester each 3. Four fatal cases of whooping-cough were reported from Liverpool, 3 from Birmingham. Diphtheria accounted for 8 deaths at Liverpool.

The number of stillbirths notified during the week was 264 (corresponding to a rate of 43 per 1000 total births), including 40 in London.

ST. JOHN'S HOSPITAL FOR SKIN DISEASES.—At the recent annual meeting Lord Chesterfield, who presided, remarked that there is still no accommodation for small children, and that arrangements will presently have to be made for paying patients. There is no isolation or observation ward and the out-patient department is congested. Since it is impossible to enlarge the present building in Leicester-square a new out-patients' department will sooner or later have to be provided in some other central part of London.

ST. BARTHOLOMEW'S HOSPITAL: ANNUAL REPORT.—In 1931 the new in-patients numbered 11,162 and their average stay was 20·9 days: new out-patients were 95,121. In-patients from outside the county of London were nearly 42 per cent. of the total—figures which, the annual report points out, tend to show the national character of the hospital. While there was an appreciable increase in the in-patients, there was a slight fall in the attendances of out-patients and in casualties, and it is anticipated that there will be a further decrease as the result of the recent decision of the governors that national health insurance patients, other than cases of accident or emergency, will not be treated unless they produce a letter from a panel doctor. The income at £224,534 shows an increase of £8170, although donations and subscriptions have declined. The expenditure was £216,370, a decrease of £2770. Considerable economies have been produced as the result of the work of a special committee. In response to representations from the Medical College of the hospital as to the necessity of securing additional facilities for the training of students in obstetrics negotiations are proceeding for amalgamating with a maternity hospital. It is proposed also to absorb the Royal General Dispensary which occupies a corner site on the east side of Bartholomew Close, and the Charity Commissioners have accordingly prepared a draft scheme which, in its final form, is to be recommended to the governors for acceptance.

practitioners came up for discussion. The clerk to the insurance committee had been requested by an assurance society to act in accordance with an authority made by an insurance practitioner to deduct certain moneys from fees due to him quarterly, and pay the same to the assurance society, and the insurance committee resolved to defer action until a report was received from the panel committee. When the matter came later before the drugs committee a letter was read from the deputy medical secretary of the B.M.A. stating that a subcommittee of the Insurance Acts Committee was investigating pensions schemes, and asking the panel committee to hold its hand. This was agreed to.

PUBLIC HEALTH SERVICES

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1931 statistics of two county boroughs and one metropolitan borough :—

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 live births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality in childbirth.
Sunderland .. (187,600)	21·8	11·4	1·42	1 20	3·0	1·8	99/36	66	4·6
Bootle .. .. (77,160)	21·6	14·8	1·59	1·46	3·4	1·6	95/41	43	4·2
Bermondsey .. (112,400)	17 4	12 5	1 16	1·30	2·6	1·7	57/—	22	6·1

Registered stillbirths per 100 live births: Sunderland, 3·9; Bootle, 3·8; Bermondsey, 2·5.

Sunderland.

Dr. A. S. Hebblethwaite says the year was not a pleasing one statistically. The general death-rate in the county borough was slightly up and epidemics of measles, influenza, and pneumonia in the first two quarters of the year caused a higher infant mortality-rate. The two-yearly visitation of measles gave rise to 2294 notifications and 108 deaths—a death-rate of 0·57 to be compared with 0·07 for England and Wales. The increased prevalence of cerebro-spinal fever was "shared by the country at large." In Sunderland there were 39 cases and 27 deaths. Difficulty has been experienced in obtaining bacteriological confirmation at an early stage and was reported to the Ministry. Owing to the pressure from other infectious diseases the female ward for tuberculosis had to be used during the later part of the year for scarlet fever, and Dr. Hebblethwaite records an increase of the deaths from pulmonary tuberculosis as additional evidence for the need of more satisfactory institutional accommodation for this disease.

The brightest feature of the year has been the development of the municipal (ex-poor-law) hospital of 415 beds. Additions have been made to the resident and consulting staff. The increase of 20 in the nursing staff has made it possible to defer the waking time of patients to a more satisfactory hour. The accommodation includes tuberculosis wards, a 7-bed ward for school-children suffering from tonsils and adenoids, an electrotherapeutic department, and a 13-bed maternity wing, which admits an increasing number of confinement cases. Critics of the increased cost are reminded that 75 per cent. of the admissions are acute cases, as against 25 per cent. in previous years. The percentage of beds occupied by children during 1931 was 41·6; and 62 private patients were admitted for an average stay of 30·9 days. The surgical beds have been increased and on August 1st an out-patient department was opened. Operations numbered 763 as against 197 in the previous year. General practitioners send in cases after consultation with the medical superintendent, but necessitous cases are admitted through the relieving officers and district medical officers. The greatest need appears to be a hostel for the nurses, who are at present accommodated in temporary huts.

Housing has been a difficult problem. The municipal houses do not house the people who most require re-housing and "these latter have taken the remedy in their own hands by occupying tenemented property in the best residential parts of the town." The new houses erected numbered 520 (including 371 municipal), as compared with 756 in the previous year. A voluntary housing association does useful work by buying and reconditioning and letting at low rentals; and their supervision of their tenants has led to much improved conditions. A second swimming bath is nearing completion, with modern chlorination and filtration, but with this addition, says Dr. Hebblethwaite, provision for swimming will still be inadequate.

Bootle.

Dr. F. T. H. Wood reports a rise in the death-rate of the county borough, due to respiratory disease and influenza in the first quarter. The infant mortality-rate was 16 points up, largely owing to neonatal deaths which were the highest since 1911. The accommodation at the Isolation Hospital was severely taxed by a high incidence of diphtheria and scarlet fever. Plans for a new 45-bed pavilion and an extension of the nurses' quarters were approved in July, but, at the request of the Ministry for economic reasons, a 12-bed cubicle pavilion is to be erected as a first instalment. The recent census enumeration showing a net increase of only 312 was a surprise, indicating large unsuspected emigration. During the corresponding intercensal period the excess of births over deaths was 8548.

In 1921 the population of Bootle of 76,487 lived in 13,320 houses, equivalent to 5·64 persons per house; whereas in 1931 the population of 76,799 lived in 15,391 houses, equivalent to 4·98 persons per house. The 1700 new municipal houses in the Orrell area have absorbed some 9000 people; and there were only 8726 persons living more than two to a room, the usual standard for overcrowding, in 1921. On the other hand there have been 1228 applications for municipal houses since February, 1931, from Bootle residents living in rooms and the particulars of their families suggest considerable overcrowding. Dr. Wood refers to the smaller size of the families nowadays and the praiseworthy demand for a higher standard of living in explanation of these somewhat anomalous figures and he is quite clear "that, however gratifying recent achievements have been, the end of municipal housebuilding is not yet in sight." Good progress was made in the reconditioning of 275 unfit houses, 36 of which were in an "improvement" area. With very few exceptions the schedules of repairs needed were accepted by the owners without modification or the service of statutory notices. The new by-laws for houses-let-in-lodgings, approved on May 19th, 1931, which require the owner to provide for each occupying family adequate and readily accessible w.c. accommodation, domestic water-supply and accommodation for washing clothes, for the storage of food, and for the preparation and cooking of food, are being put in force vigorously.

The antenatal clinics were attended by 748 new benefit, thus relieving the sickness benefit funds of a big percentage of claims due to pregnancy and associated diseases. This latter suggestion would considerably ease the burden of doctors, insured persons, and agents of approved societies who have to decide whether the pregnancy claim is indeed a sickness claim. I have to point out that the National Health Insurance Act provides a sickness and maternity benefit, but there is no money for payment of a pregnancy benefit as such. Hence some of the claims paid at present are obtained by various subterfuges. So the question I ask is: Will the present holders of these surplus moneys prove willing to make such a beau geste? I am not optimistic enough to think so. Compulsory legislation then to take away surplus—but who is going to initiate such an unpopular Bill?

The *contingencies fund* (central fund of societies) referred to by Dr. Walker has been so repeatedly drawn on that it has resulted in present proposals to reduce benefits. The limit has been reached.

Finally we come to the question of an *additional levy*, and here I see Dr. Jane Walker and I are in some agreement, but she is bolder than I, for she demands a levy on all insured persons and I only go by the actuarial calculation—i.e., ½*d.* per insured woman and small reduction of sickness and disablement benefit. I can only reiterate that I support this last method because I believe it is sound finance, and I think the married women get a fair return for their contributions. I repeat that the National Health Insurance Act is an insurance scheme and must have limitations, and I dislike attempts to make insured women recipients of a dole or a charity on the lines of the present unemployment fund.

I can see no justification in the final paragraph for the statement "the lower sickness and unemployment benefits payable to women are a further cause of her greater sickness." If this were true it would follow that medical benefit and all other benefits provided under the National Health Insurance Acts are of no use; and the sooner they are abandoned the better for all. Experience of panel practice lends no support to these statements. No one to-day would seriously suggest the abolition of the National Health Insurance scheme. It is well embedded in our social organisation after 20 years' experience of its value. We await further developments along insurance lines when the state of national finances will permit. Then perhaps dependents may be brought within its scope. I must regretfully maintain that in the interest of a properly regulated finance, and to be fair to all contributors, there must at least be a temporary reduction of sickness and disablement benefits to married women.

I am, Sir, yours faithfully,

Plymouth, May 31st, 1932. MABEL L. RAMSAY.

TOXIC EFFECTS OF PHENOLPHTHALEIN.

To the Editor of THE LANCET.

SIR,—In his letter on this subject in your issue of May 7th (p. 1015) Dr. Aubrey lays himself open to the same criticism which he makes on the letter of Dr. Hunt in a previous issue. He remarks on the want of information about the dosage of phenolphthalein producing toxic symptoms, but he gives none himself in the cases he describes. No reference has been made in this correspondence so far to the description by Lauze in 1924 of cases of uræmia, of general collapse, and of severe purpura after the administration of this drug. In the first of two new cases which he described in the *Clinical Journal* severe vertigo, cyanosis, hæmorrhagic stools, and severe faintness were noted on five separate occasions but he also omitted to state the dose given. In the second case in a man of 60, which was similar and equally severe, the onset followed a few hours after taking a medicated cocoa containing only 0·1 g. of phenolphthalein. Extensive purpura was present in each case.

I am, Sir, yours faithfully,

C. E. LOWE, M.R.C.S. Eng.

Heswall-on-Dee, Cheshire, May 24th, 1932.

THE UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

To the Editor of THE LANCET.

SIR,—Knowing as I do that the court of governors of the University of Durham College of Medicine have decided to institute an inquiry into the administration of the College, and that that decision was largely influenced by doubts as to the wisdom and justice of the action of the Council with regard to the personnel of the department of bacteriology, I am astonished to observe that the Council are now advertising for a professor of bacteriology. In these circumstances I venture to suggest that it would be well that any prospective candidate should make himself familiar with the present condition of affairs in the College, and should scrutinise carefully the terms and conditions of the appointment.

I am, Sir, yours faithfully,

RUTHERFORD MORISON,

Emeritus Professor of Surgery, Durham University.

St. Boswells-on-Tweed, May 24th, 1932.

FREE TREATMENT AT VENEREAL CLINICS.

To the Editor of THE LANCET.

SIR,—The daily press anticipates that drastic economies in the social services will be carried out before the end of the year. Scope for such economies without danger to the national health would appear to lie in reducing the expenditure on venereal clinics. At present persons who can well afford private treatment attend such clinics and the curious position obtains that the only diseases in which, in the great majority of cases, infection is due to a voluntary act of the patient are also the only diseases accepted at clinics for treatment without any inquiry as to the patient's income or financial ability to pay for private treatment. As a result of this special privilege of the patient suffering from venereal disease, the practice of many venereal specialists has decreased almost to vanishing point, so that the State loses their income-tax in addition to the money voted from public funds for the maintenance of unnecessarily large and numerous V.D. clinics.

The venereal specialist sees ruin staring him in the face, as with the universal financial stringency more and more patients go to clinics who do not properly belong to the hospital class, and who can even with their reduced incomes well afford a moderate fee for private treatment. If free, or nearly free, treatment at V.D. clinics was restricted to married persons with incomes below £300, or unmarried adults with incomes not exceeding £150, both the State and the venereal specialist would benefit and the health of the country would not be risked to the slightest degree. I am, Sir, yours faithfully,

H. WANSEY BAYLY.

Harley-street, W., May 25th, 1932.

CORRESPONDENCE

APPENDICITIS.

To the Editor of THE LANCET.

SIR,—Sir James Berry has done a service to medicine by emphasising the need for a conservative attitude in dealing with appendicitis with abscess. On the other hand it would be disastrous if his advice was taken to apply to all cases of acute disease of the appendix.

Over 3000 persons die in this country every year of acute appendicular disease. A few of these are the victims of ill-advised and meddlesome surgery. The vast majority of the fatalities, however, are in cases of acute appendicular obstruction, a disease differing essentially in its pathology and in its clinical symptoms from primary inflammation of the appendix.

Since 1914 I have sought to obtain recognition of this acute form of intestinal obstruction as an entity. It differs from acute inflammation of the appendix in the vital factor of tension of decomposing fæcal matter within the lumen of the organ leading to gangrene and perforation before protective adhesions have had time to form. Colicky pain, and usually vomiting, but no fever or acceleration of pulse-rate, distinguish its onset and, when diagnosed, immediate operation is imperative. If the obstructive cases are dealt with promptly, we shall not have to deplore a mortality figure which represents a needless sacrifice of useful lives. The inflammatory and localised suppurative types of case may safely be treated with conservatism and restraint.

What is most needed is the education of the public to the fact that abdominal colic demands medical advice *and not purgation*; that a dose of castor oil, administered for an undiagnosed abdominal pain, may be lethal. We owe it to the public, however, to be able to distinguish the dangerous condition when it is present and this we can only do if we have a clear understanding of the underlying pathology.

I am, Sir, yours faithfully,

Edinburgh, May 24th, 1932. D. P. D. WILKIE.

To the Editor of THE LANCET.

SIR,—By his timely and wise remarks Sir James Berry has done a real service to surgery. I share his doubts as to whether, from the point of view of the *patient*, the progress of surgery has been as beneficial as it might have been. I am in cordial agreement with his criticism of the teaching that every case of acute appendicitis requires immediate operation, and I write this with the greater pleasure, inasmuch as in this matter I have not always seen eye to eye with my respected former teacher. Now I admit readily that he was right and I was wrong.

For many years I have taught that in abdominal surgery success depends very largely on adequate preparation of the patient. This, I am convinced, is no less true in dealing with cases of acute appendicitis. A delay of some hours spent in preparatory treatment not only ensures a safer operation, but in the majority of cases brings about such an alleviation of the symptoms that operation can be delayed until the acute stage is passed. Shortly after the war I began the practice of delaying operation in all cases of acute appendicitis for six or eight hours, so as to allow time for the patient to have rectal injections of saline and glucose, and sodium bicarbonate by the mouth. I was surprised to find how frequently the symptoms subsided, so that in some cases operation was not necessary at all and, in the majority operation could be deferred for four or six weeks.

I have no doubt that Sir James Berry is right when he says that there is a greatly exaggerated idea about the mortality of appendicitis when properly treated on common-sense lines. Doubtless some cases do necessitate prompt operation, but they form the minority. Perforation of the appendix is obviously an indication for operation, but we must remember that even general septic peritonitis is not inevitably fatal. Further, even when we suspect perforation and operate, we are sometimes surprised to find that nature has localised the pus, so that operation might have been postponed. I admit that, in the hands of an expert, operation during the acute stage is relatively safe, but an expert is not always available, and I believe that if the precepts of Sir James Berry were followed more generally, the mortality of acute appendicitis would be reduced greatly.

I would however point out, first, that the "delayed treatment" should be carried out only when the *patient is in a nursing home or* hospital, where immediate operation can be performed if the occasion should arise. Secondly, Lord Moynihan pointed out many years ago the grave risk of perforation which attends the administration of purgatives. I have verified the truth of this warning on many occasions. When purgatives have been administered, especially in children, only prompt measures will prevent the catastrophic effects of the injudicious misuse of castor oil.

There is no doubt that, as Lord Moynihan so aptly says, "Deaths are too often 'therapeutic,' caused, that is, by the active measures designed for relief." Even in modern surgery there is room for clinical judgment and common sense, whereas the policy too often adopted is the easier but more dangerous one of "Look and see."

I am, Sir, yours faithfully,

HERBERT J. PATERSON.

London, W., May 28th, 1932.

REDUCTION OF BENEFITS OF INSURED WOMEN.

To the Editor of THE LANCET.

SIR,—It is always well to have the two sides of a question presented, and Dr. Jane Walker has ably presented the case in favour of non-reduction of insurance benefits for married women. So I will just make comments on her letter.

The *unemployment benefit fund* began well as an insurance scheme. It is no longer a well-organised insurance scheme. It has completely broken down on its insurance side and contributions are in no way equivalent to benefits given. It is a national dole with consequent very heavy charges on the national exchequer, and attempts are now being made to restrict it to its original intention by the means test and in other ways.

Use of surplus moneys.—If the approved societies and the 88 per cent. of men and 38 per cent. of women beneficiaries would give consent to alienate say 2½ million pounds of their quinquennial valuation and give it to the Government, the yearly deficit of £420,000 for the married women's claims pay for the next five years could doubtless be met, or alternatively give the same amount to initiate what really would be much more useful—*viz.*, a statutory pregnancy

TOXÆMIA OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—I read with interest your leading article (May 21st, p. 1101) and note that H. J. Stander concludes that calcium therapy is not a rational measure in eclampsia. Similarly D. F. Anderson found that calcium gluconate had no abrupt effect on the frequency of fits. In a case of eclampsia, described in your columns,[1] I produced a definite hypercalcæmia, the serum calcium being 13·9 mg. per 100 c.cm. serum, and still the convulsions persisted. That calcium is not a panacea in pregnancy toxæmia is obvious. Thrombosis is a predominant feature in eclampsia and it seems somewhat irrational to administer a drug which increases the coagulability of the blood.

I am, Sir, yours faithfully,
W. C. W. NIXON, M.B., F.R.C.S.
St. Mary's Hospital, W., May 30th, 1932.

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[1] THE LANCET, 1931, ii., 291.

SPONTANEOUS LACTATION.

To the Editor of THE LANCET.

SIR,—I have read with interest in your issue of April 30th (p. 928) Dr. Krestin's paper on Spontaneous Lactation with its full bibliography. May I add some quotations on the subject from ancient Jewish literature. In the Talmud, which dates from about the second century, we find in Tract "Sabbath" p. 53, the following story:—

> "It happened with one whose wife died and had left a suckling infant and the father had no means to provide for a nurse, then miraculously two nipples, like those of a woman, have opened from him and so he himself nursed his son. Rabbi Joseph said: 'Behold what great a man he is that such a miracle occured with him.' Abayê argued: 'No, on the contrary, what a bad man he is, that for his sake nature has had to deviate from the fixed laws of creation.'"

In the Bible (Esther, chap. 2, verse 7) we read:—

> "And he brought up Hadassa, that is Esther, his uncle's daughter; for she had neither father nor mother, and the maid was fair and beautiful, whom Mordecai, when her father and mother were dead, took for his own daughter."

This passage is commented by the Talmudic scholars in "Midrash Bereshith Rabah" in a similar way:—"That Mordecai has then developed two mammæ like those of a woman."

I am, Sir, yours faithfully,
M. N. NEUMANN, M.D.,
Physician in charge of the Internal Department of the Bicur-Cholim-Hospital, Jerusalem, Palestine.
May 11th, 1932.

OBITUARY

HERBERT WATNEY, M.D. Camb., F.R.C.P. Lond.,

LATE PHYSICIAN TO ST. GEORGE'S HOSPITAL.

THE death is announced in the eighty-ninth year of his age of Dr. Herbert Watney, the well-known agriculturist.

Herbert Watney was born in 1843, the son of Mr. James Watney, of Haling Park, Surrey, a member of the great brewing firm. He was educated at Rugby and St. John's College, Cambridge, whence he proceeded to St. George's Hospital, on taking up the study of medicine. He graduated at Cambridge as M.B. in 1870, and proceeded to the M.D. in 1876, and, after serving the usual appointments, was elected assistant physician to St. George's Hospital. He was a successful member of the teaching staff and in particular his lectures in the medical school on physiology were valuable to the students. He became full physician to the hospital in 1881, and in 1883 was elected F.R.C.P. and appointed examiner in medicine at Cambridge. But he shortly afterwards retired to an estate which he had bought in Berkshire and which carried with it the manors of Bradfield and Ashampstead. His early retirement from practice led to the discontinuance of physiological work which had promised to be of real significance.

During Dr. Watney's long and busy life as a country land-owner he became well known in agricultural circles as an expert on afforestation and pedigree cattle, while the neighbourhood benefited by an installation of water-supply which he provided at his own expense for the villages adjacent to his property. He married in 1873 Sarah, daughter of the Rev. Marcus Rainsford, who long predeceased him and by whom he had five children. The eldest son was killed in the war, while the second son and two daughters entered the medical profession and have been largely engaged in missionary work in China. Dr. Watney was himself a devoted churchman and a great supporter of foreign missions. As a Cambridge undergraduate he had been a noted oar, rowing for three successive years in the Cambridge boat, and winning the Colquhoun sculls.

WILLIAM DOVE MACFARLANE, M.D. Glasg., F.R.F.P.S. Glasg.,

LATE PROFESSOR OF MIDWIFERY IN ANDERSON'S COLLEGE, GLASGOW.

Prof. Macfarlane, who died at Hunter's Quay on May 6th, made a reputation for himself both as a teacher and organiser, devoting much of his time to the development of the practice of gynæcology and obstetrics in the city of Glasgow.

William Dove Macfarlane was born at Busby, where his father was a medical man. He was educated at the University of Glasgow, and graduated in 1890 as M.B., C.M. He held the usual residential appointments and was for a time resident surgeon in the Victoria Infirmary, Glasgow, after which he was able to enjoy a good deal of post-graduate work through visits to Austria and Germany. On his return from the continent he joined his father in general practice at Busby, and worked there for a considerable period before deciding to specialise in surgery and gynæcology on his election to the staff of the Glasgow Royal Infirmary. There he made a mark for himself immediately as a clinical teacher, and was soon appointed surgeon to the Glasgow Royal Samaritan Hospital, while in 1911 he was invited to fill the chair of midwifery in Anderson's College. So successful was he as an exponent of his subject in lecture room and operating theatre, that his early retirement was received with regret, but in 1920 he resigned both his professorship and his hospital appointments and concentrated upon private practice, and upon the improvement of clinical teaching and the coördination of the various opportunities offered for the study of gynæcology in Glasgow. He was elected to the board of management of the Glasgow Royal Maternity Hospital, and to the Council of the Royal Faculty of Physicians of Glasgow, while he served as president of the Glasgow Obstetrical and

TRAINING IN TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I am interested in Dr. Davidson's letter with regard to instruction in pulmonary tuberculosis, and particularly with regard to his remarks that there is no compulsory teaching in many of the medical schools. The present position of Charing Cross Hospital Medical School is as follows: An out-patient clinic exists under the care of Dr. F. H. Young, and attendance at this is a compulsory part of every student's curriculum. In the in-patient department ample material exists for comprehensive instruction in tuberculosis.

I am, Sir, yours faithfully,

ERIC A. CROOK,

Dean, Charing Cross Hospital Medical School.

May 20th, 1932.

To the Editor of THE LANCET.

SIR,—I wish to support what Dr. Davidson says in his letter in the strongest possible terms. I have the opportunity of being in touch with recently qualified men from two London teaching hospitals. Their lack of knowledge of pulmonary tuberculosis is lamentable, and in addition to the reasons Dr. Davidson has put forward, I think the following are of importance.

Some physicians do not care to have cases of pulmonary tuberculosis in their wards, and the consequence is that a student during his ward clerkship gets very little opportunity of learning and recognising anything except the grossest physical abnormalities in the chest. Secondly, in out-patient teaching the early case of pulmonary tuberculosis who shows little or nothing in the way of abnormal physical signs is demonstrated very infrequently and consequently the student does not realise that acute types of pulmonary tuberculosis may progress very far unless the condition is suspected merely on the history.

In addition the newly qualified man has usually no idea of the facilities made available by public authorities for the free examination of sputa for tubercle bacilli or those offered for residential treatment. A good deal could be done to remedy these failings without adding compulsory attendance at a tuberculosis dispensary to the curriculum, but I doubt whether a knowledge of "after-treatment" is likely to be adequately taught except in the latter.

I am, Sir, yours faithfully,

Harley-street, W., May 19th, 1932. F. H. YOUNG, M.D.

OBESITY FOLLOWING SUBARACHNOID HÆMORRHAGE.

To the Editor of THE LANCET.

SIR,—The cases of spontaneous subarachnoid hæmorrhage described by Prof. A. J. Hall in your last issue are of particular interest to me, as I was in attendance on Case 3. In certain aspects this case differed from the others described, and as she removed shortly after the first attack and Dr. Hall lost sight of her, he will, I have no doubt, be interested in the subsequent events. After the first attack in December, 1926, the patient remained well for four months. She then had severe left-sided headaches for five weeks, followed by an attack of more violent epileptiform convulsions. During a brief interval in one of these attacks the face became almost black, breathing stopped, and I thought she was dead. Artificial respiration was done and the breathing started again. Evidently at this moment the hæmorrhage must have been pressing on the vital centres at the base of the brain and paralysing the respiratory area. For the next four weeks the temperature varied from 99° to 103° F. Recovery then ensued with the development of obesity, so that in a comparatively short period the patient put on 3 st. in weight.

The points in this case I wish to emphasise are the prolonged high temperature, the large hæmorrhage despite which the patient recovered, and the obesity. Dr. Adie who also saw this case told me he had never observed this condition before. Laboratory tests in this patient showed the urea concentration normal, sugar tolerance normal, basal metabolic rate normal, a negative Wassermann. The menses were normal. X ray examination showed skull sinuses clear, and the pituitary fossa of a normal size and shape; no other clinical evidence of pituitary disease. Now comes the interesting question. What is the cause of this abnormal increase of fat in spontaneous subarachnoid hæmorrhage? Despite the laboratory findings, I suggest the obesity is due to some damage, irritation, or derangement of the pituitary gland or its stalk. This seems to me the only possible explanation. Apart from the obesity the patient is now in fairly good health.

I am, Sir, yours faithfully,

JOHN R. O'BRIEN, M.D., L.R.C.P.

Hull, May 28th, 1932.

PUERPERAL SCARLET FEVER.

To the Editor of THE LANCET.

SIR,—Prof. Okell, in his third Milroy lecture which appeared in your issue of April 23rd, inquires whether the early rash in cases of so-called surgical scarlet fever gives a positive Schultz-Charlton reaction. A recent case of puerperal fever, accompanied by a profuse scarlet rash, which I was called to see, certainly did.

The case, which was under the care of Dr. Olive Coldicott, of Grinshilll, had an easy breech delivery on April 26th. Two days before this a child had returned to the house from hospital, suffering from a still discharging abscess of the neck, stated to be a streptococcal infection. On the 29th the woman's temperature shot up, and a "scarlet" rash developed. There was no sore-throat or vomiting. When seen by me on May 2nd the pulse was 132, temperature 103·6° F., and there was a thick universal scarlet rash. There was a condition of marked euphoria, with bright eyes, and alert mental condition. No signs on fauces, tonsils, or tongue. Uterine involution was sluggish, and lochia not offensive. No other physical signs per vaginam or elsewhere. A Schultz-Charlton test had been performed by Dr. Coldicott, and was strongly positive.

In view of the possibility of this patient infecting others with frank scarlet fever (probably an unnecessary apprehension) I arranged for her removal to the ordinary fever hospital. Here she was under the care of Dr. A. D. Symons, and was given hot vaginal douches, under the influence of which a thick purulent discharge began to come away. I was asked to see her again on May 3rd, and gave her glycerin drainage by the Remington Hobbs method. There was no doubt as to the profuse uterine discharge, or the puerperal nature of the rash, probably contracted from the child returned from hospital.

The patient was severely ill for some days, and was given several injections of antiscarlet serum. She also exhibited some pleurisy at one base, but eventually made a complete recovery.

I am, Sir, yours faithfully,

R. L. E. DOWNER, M.D. Lond., M.C.O.G.

Shrewsbury, May 28th, 1932.

1931, and on April 30th, 1932.—Sir E. Hilton Young replied: The number of persons (men, women, and children) in receipt of poor relief in England and Wales (excluding rate-aided patients in mental hospitals, persons in receipt of domiciliary medical relief only, and casuals) on Saturday, April 25th, 1931, and on Saturday, April 30th, 1932, were 1,003,700 and 1,195,038 respectively.

THURSDAY, MAY 26TH.

The Sale of Disinfectants.

Mr. Glossop asked the Home Secretary if his attention had been called to the result of a High Court appeal which had brought to light new facts relating to the sale of disinfectants; and whether he would consider the introduction of legislation to revise the existing Poison and Pharmacy Acts.—Sir Herbert Samuel replied: Yes, Sir, and on the question of fresh legislation to deal with the sale of disinfectants. I would refer the hon. Member to the answer which I gave to a question on March 24th.

[In replying to a question of Captain Elliston on March 24th the Home Secretary stated that the introduction of the Poisons and Pharmacy Bill, 1931, again next session would be considered in due course.]

Mr. Glossop asked the Minister of Health if any steps could be taken, in view of the present position of maternal mortality, to warn the public of the danger of using lysol and other disinfectants sold at cheap stores in such a diluted form that when diluted in accordance with usual practice they were useless; and if he would take steps to prevent the sale of such diluted disinfectants.—Sir E. Hilton Young replied: I propose to await the final report of the Maternal Mortality Committee which will, I understand, include observations on the subject of the use of lysol in midwifery. I have no power under the existing law to take such steps as are suggested in the second part of the question.

Boneless Meat and Public Health.

Captain Ramsay asked the Minister of Health whether the public health officials were able to carry out satisfactory tests in regard to the boneless meat not in carcass form imported into this country, in view of the fact that the internal organs wherein frequently the only traces of disease existed had been removed from such meat.—Sir Hilton Young replied: I am advised that while it may be possible to detect disease in boneless meat, the only satisfactory way of ascertaining that meat is free from disease is by inspection of the whole carcass at the time of slaughter. I am accordingly proposing to amend the Imported Food Regulations so as to require an official certificate of inspection with any imported meat less than the whole of the carcass. I am sending my hon. and gallant friend a copy of the existing regulations and the draft amending regulations.

Psittacosis and Parrot Importation.

Mr. Temple Morris asked the Minister of Health whether in view of the fact that no case of psittacosis had been reported in Argentina for over a year and the inconvenience the present restriction on the importation of parrots was causing the public, he could see his way to modify the present regulations regarding the introduction of parrots into this country.—Sir E. Hilton Young replied: This question is receiving continuous attention in my department in the light of all the information available on the subject, but I am not satisfied that the risk of the spread of psittacosis through the importation of parrots has so far diminished that the restrictions on their importation, which apply generally and not only to Argentina, could safely be relaxed at present.

Economy in Local Government Expenditure.

Mr. Hall Caine asked the Minister of Health whether his department would refrain from pressing the different local authorities to carry out all statutory duties imposed upon them which these local authorities might consider might usefully be postponed in view of the economic situation of the country.—Sir E. Hilton Young replied: The reduction of local expenditure was dealt with in a circular issued last September. The action of my department is in accordance with the principles laid down in that circular, which whilst deprecating a wholesale course of cutting down expenditure whatever be its purpose, requires the careful scrutiny of the whole field of expenditure made necessary by the financial situation.

Butter-fat Content of Tinned Cream.

Sir Charles Cayzer asked the Minister of Health whether his attention had been called to the recent report of the Walsall borough analyst with regard to imported cream sold in tins, which was stated in such report to contain only 22 per cent. of butter-fat as against the usual 50 per cent. in fresh cream; and whether he would consider the introduction at an early date of regulations to provide that all tinned cream should bear a label stating the precise butter-fat content of the cream therein.—Sir E. Hilton Young replied: I am aware of the report referred to. I have no power to make regulations for the purpose suggested, but I have taken note of the matter in connexion with other representations which have been made as to the composition and labelling of articles of food.

Tuberculosis Grants.

Mr. West Russell asked the Minister of Health what were the total sums expended by the Exchequer in respect of tuberculosis in each of the seven years 1924 to 1930: were the sums expended conditional upon proportional expenditure by local authorities: and, if so, what were the proportional terms.—Sir E. Hilton Young replied: The grants made by my department for this purpose were as follow:—

1. *Grants towards the expenditure incurred by local authorities on the treatment of tuberculosis.*

Year.	£	Year.	£
1923–4	1,336,741	1927–8	1,710,248
1924–5	1,430,407	1928–9	1,752,112
1925–6	1,546,828	1929–30....	1,820,144
1926–7	1,631,169		

These grants included (1) a fixed annual grant of £340,788 in lieu of the sums previously available for the treatment of insured persons out of funds provided under the National Health Insurance Acts; (2) a grant equal to 50 per cent. of the approved net expenditure of local authorities on the treatment of tuberculosis after deducting the fixed grant.

2. *Capital grants in aid of the erection or extension of institutions for the residential treatment of tuberculosis.*

Year.	£	Year.	£
1923–4	87,070	1927–8	27,320
1924–5	14,521	1928–9	29,409
1925–6	18,679	1929–30	25,496
1926–7	18,203		

These grants were made at the rate of £180 per bed, subject to a limit of three-fifths of the total cost.

Staff of Ministry of Health.

Colonel Gretton asked the Minister of Health what was the number of the staff employed in the Local Government Board in 1913 and the total of their salaries in that year; and what was the number of the staff employed by the Ministry of Health in the past year 1931 and the total of the salaries paid in that year.—Sir E. Hilton Young replied: The Local Government Board staff in 1913 numbered 947: the expenditure on salaries was £250,846. The staff of my department in 1931 was 6464 with a salary cost of £1,850,972.

MONDAY, MAY 30TH.

Contagious Abortion in Cattle.

Lord Scone asked the Minister of Agriculture what steps were being taken to eradicate epizootic abortion in cattle.—Sir J. Gilmour replied: Contagious abortion in cattle has not been made a notifiable disease as it does not lend itself to legislative control. Veterinary research has, however, made available a reliable test by which affected animals can be detected, and also an immunising agent suitable for use in heavily infected herds. As I have already announced, the Government is undertaking an investigation into the means of securing a reduction of disease amongst dairy herds, and contagious abortion is one of the diseases included in this inquiry.

A Driving Test for Motorists.

Mr. Remer asked the Minister of Transport if he would introduce legislation requiring motorists to undergo a driving test before being granted a licence and requiring all cyclists to be registered.—Mr. Pybus replied: The Road Traffic Act, 1930, already empowers me to prescribe a test for applicants for driving licences suffering from certain physical disabilities, and a driving test for this purpose has been prescribed. The question whether there should be a general driving test was discussed at considerable length during the passing of the Bill, and I should not feel justified in introducing amending legislation on the point. The cost and inconvenience of requiring all cycles to be registered would, I think, outweigh any advantages that might appear to attach to such a system.

Protection of Pedestrians against Street Accidents.

Sir William Davison asked the Minister of Transport whether his attention had been called to the method adopted by the municipal authorities of Mannheim to make pedestrians realise the risks they incurred by carelessness in

Gynæcological Society and, during the annual meeting of the British Medical Association at Glasgow, was secretary of the section dealing with those subjects. He was the author of "Essentials of Midwifery and Gynæcology, notes for students," published early in his teaching career; of Uterine Fibroids, a study of 150 cases communicated to the *Glasgow Medical Journal*; and of papers on Ovarian Cyst and Retro-displacement of the Uterus, communicated to the *Journal of Obstetrics and Gynæcology*. His papers were clear and practical, but he was an infrequent writer and refused more than one request to produce a text-book, or to collaborate in the production of such a work.

Prof. Macfarlane's death will recall his memory to very many who owe to his instruction lessons of the highest professional value, for he was a great teacher.

THOMAS FAWSITT, M.B.E., M.R.C.S. Eng.

Dr. Fawsitt was sincerely respected in Oldham, to which he gave his whole professional life, and his death at the age of 86 brings back memories of a long career of service. Born in the town, the son of Dr. Thomas Fawsitt, he was sent to Rugby, and there won the good opinion of Dr. Temple, afterwards Archbishop of Canterbury, who recommended that he should enter the Church. This advice was not taken, however, and Fawsitt, at the age of 17, was apprenticed to his uncle—who had taken over the family practice—and attended lectures at the Manchester School of Medicine. Later he went up to Guy's Hospital, whence he qualified in 1867. Returning two years later to become his uncle's partner he was soon a familiar figure in the town. With his white horse—usually tied to a lamp-post—he was ever at the call of all and sundry. "Can you recall anyone who has worked as he has done for the sheer joy of doing it?" asked a colleague when in 1920 the Oldham Medical Society gave a dinner in his honour. "Morning, noon, and night, the whole year round—barring a short three weeks—work has been his absorbing and almost only interest. His early rising has become a byword, likewise his cryptic conversation with garrulous patients, his readiness to respond instantly to a call at any hour—day or night—no matter how inconvenient, and, lastly, his wonderful endurance." When the Oldham Royal Infirmary was opened in 1872 Dr. Fawsitt and Dr. George Thomson were the first members of the staff, and it was not long before the former became the leading surgeon of the town. To the infirmary he remained a constant friend, while his interest in the local nursing association and in the St. John Ambulance Association—he began lecturing for it in 1883—was close and active. In 1922 he received the freedom of the borough, his portrait, and a large monetary testimonial which was handed over to the Royal Infirmary.

By his first marriage Dr. Fawsitt had two children, neither of whom is living. His second wife died a few weeks before him, and he is survived by their son.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

CHILDREN AND YOUNG PERSONS BILL.

MOVING the second reading of this Bill in the House of Lords on Thursday, May 26th, Viscount SNOWDEN, Lord Privy Seal, said the Bill was largely based on the accumulated experience of 24 years' operation of the Children Act of 1908. The publication of the reports of the Children's Branch of the Home Office stimulated public opinion in the problem of the neglected child and that led to the appointment in 1925 of a committee to deal with the question of child welfare. That committee reported in 1927, and the Bill which he now submitted was based very largely on the recommendations of that committee which was known as the Young Offenders' Committee. The Young Offenders' Committee recommended the establishment of special observation centres for children and young persons on remand. The Bill made no provision for setting up such centres. Apart from the objection on principle, it would be impossible in present financial circumstances to embark upon such a costly experiment. The estimated cost of such a centre for London would be £50,000 and the annual cost of maintenance would be over £10,000. But it was hoped that for the time being something might be done to secure the same object by improved remand homes in a number of convenient centres. These places of detention would be transferred to the councils of the counties and the county boroughs, and the Home Secretary would be empowered to inspect these remand homes. These powers would be used to the utmost to provide needed medical observation and examination. It was believed that on these lines for the time being the purpose of observation homes could be met. Dealing with the employment proposals in the Bill Lord Snowden said that under the existing law no child under 12 might be employed, except so far as the employment of children by their parents might be permitted by by-laws. A child between 12 and 14 might not be employed on Sundays for more than two hours. A child between 12 and 14 could not be employed on any day before six in the morning or after eight at night. A child between 12 and 14 might not be employed on any school day before the close of the school. The present Bill proposed to raise the age below which street trading would not be permitted from 14 to 16, subject to a limited exception where children were employed by their parents; and also to raise the age from 16 to 18 below which street trading could be regulated by the local authority. The question of the employment of children in unregulated trades had been before the Home Office and Governments for a great many years. There could be no doubt that it would have been dealt with in this Bill had it not been for the financial crisis and the critical situation of the country.

Lord SANDERSON, on behalf of the opposition, congratulated Lord Snowden on introducing a Bill for the protection of children, but he and his colleagues regretted that there was no mention of observation homes in this Bill. It was pretty generally realised that many of the offences and crimes committed by children were not due to the moral depravity of the child but to physical defects which ought to be discovered and treated.

The motion for the rejection of the Bill was negatived by 38 votes to 5, and the measure was then read a second time.

CLEANSING OF SHELL-FISH BILL.

The Public Health (Cleansing of Shellfish) Bill was read the third time in the House of Commons on May 24th, and was introduced and read a first time in the House of Lords on May 25th.

In the House of Lords on Tuesday, May 31st, the Public Health (Cleansing of Shell-fish) Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, MAY 25TH.

Poor-law Relief.

Mr. LUNN asked the Minister of Health how many persons were receiving poor-law relief in Great Britain on April 30th,

Shopping in Hospitals.

The central public health committee of the London County Council has decided to allow the sale in the Council's hospitals of certain articles during hours and under regulations to be fixed by authority. The articles that may be bought include tobacco and cigarettes, newspapers, books, stationery, and "plain sweets."

North Manchester Free Foot Hospital.

Additional accommodation at this hospital was opened last week. Hitherto it has been treating 100 cases daily, but will now be able to deal with double that number. Twenty-five students are in training.

A Ford Ward at Ilford.

Lady Levita last week opened a new ward of 27 beds at the King George Hospital, Ilford. It has been named after the Ford Motor Company, Limited, which has defrayed the cost, amounting to £10,000 ; its works are in the area served by the hospital.

Belgrave Hospital for Children.

This Clapham-road hospital last year admitted 2313 children, and there were 13,206 out-patients. The former cost £3 1*s.* 3*d.* per week ; each out-patient (61,998 attendances) cost a fraction over 8*s.* 1*d.*

Hospital Openings by the Duchess of York.

On Tuesday last week the Duchess of York opened the new Orthopædic Hospital at Mount Gold, Plymouth. Accommodation is provided for 120 patients (100 children) in three wards, each of which has a solarium, and the cost will be £56,000. On the following day the Duchess opened a new maternity ward at the Royal Northern Hospital, Holloway-road. The ward has been endowed by the Ladies' League, and a tablet unveiled by the Duchess records that it is named the Rosemary Ednam Ward, in memory of the late Viscountess Ednam, who was killed in an aeroplane accident in August, 1930.

Leicester Royal Infirmary.

The annual report, which shows that 1931 ended with a small credit balance after an expenditure of £87,597, records that the number of in-patients, 8912, has doubled in ten years. The casualty department is becoming a serious problem, and much money will presently have to be spent on new buildings. The average stay per patient was 19 3 days, and the average cost per occupied bed £158. In-patients from road accidents cost £2850, of which £484 was recovered. The nurses' quarters are being enlarged, and further extensions of those quarters, costing £50,000, will be undertaken shortly.

Asiatic Society of Bengal.

At a meeting of the medical section of this society, held in Calcutta on April 26th, with Lieut.-Colonel R. Knowles in the chair, Dr. U. N. Brahmachari read a paper on the Treatment of Kala-azar with Intramuscular Injection of Sodium Sulphomethyl Stibanilate. He reported that a series of cases had been treated with doses of 0·2 to 0·4 g. dissolved in 1 to 2 c.cm. of water, and injected intramuscularly twice a week. Effects on the size of the spleen, pyrexia, blood count, and Leishman-Donovan bodies were very satisfactory, and all the patients were cured. There were no local or constitutional symptoms. One patient suffering from albuminuria as a complication was also treated with this compound without ill result, and subsequently recovered. The compound, Dr. Brahmachari said, is obtainable under various names—e.g., Thio-sarmine, Sulfarsenol, and Kharsulfan—and has been successfully used in the treatment of syphilis. Further observations are in progress.

St. George's Hospital.

The annual report states that 4937 patients, 500 of whom were children under 12, were admitted last year, and that 262 infants were born in the hospital. The mean residence was 21·55 days, and 822 patients were sent to Atkinson Morley's Convalescent Hospital. The weekly cost per head was £4 8*s.* 2*d.*, a small reduction ; the cost per bed was £229 18*s.* 11½*d.*, a fall of more than £4 10*s.* New out-patients numbered 37,934 ; their cost per head was a fraction over 7*s.* 7½*d.*, or nearly 1*s.* 7*d.* per visit. The ordinary expenditure was £81,378, a saving of £2447 ; and there was a surplus for the year of £15,766, which was transferred to capital account for reduction of debt. The overdraft, nevertheless, remained at £29,755. A further income of £20,000 is necessary if the activities of the hospital are not eventually to be curtailed. New infant welfare, rheumatism, and orthopædic clinics were started during the year. In the physiotherapy department there were 1817 patients who made on the average 18·87 attendances, which is admitted to appear to be "somewhat high," but it is pointed out that, to be effective, massage must be given frequently and regularly.

Tribute to a Surgeon.

Recently a bronze tablet was unveiled in the main corridor of the Cameron Hospital, West Hartlepool, to the memory of the late Dr. William Gray, who was honorary surgeon to the institution from 1905 to 1931. The tablet, which has been presented by his medical colleagues, the management committee, and staff of the hospital, was unveiled by Dr. A. V. Macgregor, the senior member of the honorary medical staff. It was on Dr. Gray's initiative that the orthopædic department of the hospital was established.

University College Hospital.

In 1931 there was a fall of 461 in the number of in-patients, and of more than 4500 in the out-patients, but the in-patients stayed longer. There was also a reduction in the number of in-patients in the Ear Hospital, mainly accounted for by a smaller number of operation cases for tonsils and adenoids. Congestion of the out-patient department in consequence of the growth of antenatal and child welfare work has necessitated the purchase of several buildings immediately adjoining the Obstetric Hospital. The year's income was £108,000, a slight increase.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

FRIDAY, June 10th.—5 P.M., OPHTHALMOLOGY. Annual General Meeting. Mr. Ernest Clarke : Tay's Choroiditis. LARYNGOLOGY AND OTOLOGY. Summer Meeting at Portsmouth.

SATURDAY.—LARYNGOLOGY AND OTOLOGY. Meeting concluded.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.

THURSDAY, June 9th.—8.30 P.M., Miss Rayner : Individual Psychology in the Children's Clinic.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY, Stepney Green, E.

THURSDAY, June 9th.—3 P.M., Mr. Maurice Sorsby : 1. Demonstration of Cases. 2. Administration of Pre-anæsthetic Medication.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

TUESDAY, June 7th, and following THURSDAY.—5 P.M., Dr. J. W. McNee : Liver and Spleen, their Clinical and Pathological Association. (Second and third Croonian lectures.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, June 6th.—10 A.M. to 1 P.M., Gynæcological Wards, Genito-Urinary Operations, Skin Department, Surgical Wards. 2 to 4 P.M., Operations, Surgical Wards, Medical, Surgical, Eye, and Gynæcological Out-patients. 4.15 P.M. (Special lecture), Dr. Trevor Davies : Gynæcological Diagnosis.

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Surgical Demonstration, Throat Operations, Dental Departments. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Special lecture), Mr. Steadman : Pyorrhœa Alveolaris.

WEDNESDAY.—10 A.M. to 1 P.M., Children's Medical Out-patients, Medical Wards. 2 to 4 P.M., Gynæcological Operations, Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Fracture Demonstration. 2 to 4 P.M., Operations, Medical, Surgical, Eye, and Genito-Urinary Out-patients. 4.15 P.M. (Special lecture), Mr. Woodd Walker : Subphrenic Abscess.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Out-patients, Dental Department. 2 to 4 P.M., Operations, Medical, Surgical, and Throat Out-patients. 4.15 P.M. (Special demonstration), Dr. Archer : Biochemical.

SATURDAY.—9 A.M. to 1 P.M., Throat, Nose, and Ear Operations, Medical Wards, Children's Medical Out-patients, Surgical Wards, Surgical Out-patients. The Lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 6th, to SATURDAY, June 11th.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Post-graduate course in Gynæcology, all day.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. Course in medicine, surgery, and the specialties. All day.—CITY OF LONDON HOSPITAL, Victoria Park, E. Course in Diseases of the Chest. All day.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Evening crossing thoroughfares, by marking with a black cross on the street the spots where any pedestrian was killed or severely injured; and whether he would consider the desirability of taking similar action in the Metropolitan police area.—Mr. PYBUS replied: I am aware that action of this kind has been taken by certain authorities abroad, but I doubt whether public opinion in this country would be in favour of it. In any case, I have no statutory power to impose any such obligation on highway authorities.

First-aid Outfits on Motor Vehicles.

Mr. CLARRY asked the Minister of Transport whether he would consider the necessity of requiring all motor vehicles to carry suitable first-aid outfits.—Mr. PYBUS replied: I have already considered this subject. I do not propose for the moment, at any rate, to extend the scope of the existing regulations which requires that these outfits should be carried on public service vehicles which are used as express or contract carriages.

TUESDAY, MAY 31ST.

Safety of Life at Sea.

Mr. HANNON asked the President of the Board of Trade whether, in view of recent serious fires in ships upon the high seas, he would consider the advisability through an international conference of giving effect to the provision embodied in the Convention for Safety of Life at Sea that the materials used in ship construction should be such as to resist the spread of fire and thus prevent loss of life and damage to property.—Mr. RUNCIMAN replied: The International Convention for Safety of Life at Sea, 1929, provides for the fitting of fire-resisting bulkheads, for the establishment of fire patrol and alarm systems, and for the carriage of fire-fighting appliances on passenger steamships, but it does not provide that the materials used in ship construction and fitting generally should be fire-resisting. The question of limiting the use of combustible material in the construction and fitting of passenger ships is engaging the attention of my department in consultation with the shipping industry, and when their investigations are complete the desirability of initiating international action will be considered.

THE SERVICES

ROYAL ARMY MEDICAL CORPS.

Col. W. R. P. Goodwin, D.S.O., K.H.P., late R.A.M.C., having attained the age for compulsory retirement, is placed on retd. pay.

Lt.-Col. N. E. Dunkerton, D.S.O., from R.A.M.C., to be Col.

Maj. A. C. Hammond Searle to be Lt.-Col.

TERRITORIAL ARMY.

Maj. D. Mackie to be Lt.-Col.

Capt. D. H. Clarke, late R.A.M.C., to be Capt.

Hon. Capt. C. J. L. Wells, late Spec. List, to be Lt., and relinquishes the hon. rank of Capt.

E. M. Wright, late Temp. Lt. R.A.M.C., to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Majs. H. W. Read and S. G. Webb, having attained the age limit, retire and retain their rank, with permission to wear the prescribed uniform.

INDIAN MEDICAL SERVICE.

Lt. J. H. Crawford to be Capt. (on prob.).

Capt. C. V. Ramchandani relinquishes his temp. commn.

The undermentioned officers retire: Lt.-Col. (Bt. Col.) F. P. Mackie and Lt.-Col. C. H. Barber.

Lt. P. J. Walshe retires on account of ill-health.

ROYAL AIR FORCE.

Flight Lt. D. B. Smith is transferred from Class D (ii) to Class D (i).

Flight Lt. E. J. Mockler relinquishes his commission on appointment to a commission in the Royal Navy.

HONORARY SURGEON TO THE KING.

The King has approved the appointment of Lt.-Col. C. A. Gill, I.M.S., as Hon. Surg. to the King and of promotion to the rank of Brevet-Col.

COLONIAL SERVICE.

Dr. A. Kinghorn, senior medical officer, has been promoted to Deputy Director of Medical Services in Northern Rhodesia, and Dr. C. E. G. Nunns, Medical Officer in Gambia, has been appointed Medical Officer in Nigeria.

MEDICAL NEWS

University of Cambridge.

On May 28th the following degrees were conferred:—

M.D.—J. R. H. Towers.
M.B. and B. Chir.—L. P. J. Evans.
B. Chir.—F. J. Wright.

University of London.

At a meeting of the Senate on May 25th the Dunn exhibitions in anatomy and physiology for 1932 were awarded respectively to Mr. J. E. Spalding and Mr. W. N. Mann, both of Guy's Hospital Medical School.

Dr. A. T. Wilson will give two lectures, on the Physiology of the Adrenal Gland, at the Middlesex Hospital Medical School, Mortimer-street, W., at 5 P.M. on June 13th and 16th. Admission without ticket.

London School of Hygiene and Tropical Medicine.

The next course of lectures in Tropical Hygiene for men and women outside the medical profession proceeding to the tropics, will be given by Lieut.-Colonel G. E. F. Stammers at 5 P.M. on weekdays from June 14th to 23rd. The synopsis may be had from the secretary of the school, Keppel-street, W.C. 1.

Eugenics Society.

At a meeting of this society, to be held at the rooms of the Linnean Society, Burlington House, Piccadilly, W., at 5.30 P.M. on Tuesday, June 14th, Dr. A. S. Paterson will speak on the Law of Anticipation in Mental Disease.

Royal Free Hospital.

On Wednesday next, June 8th, at 3 P.M., the Queen will visit this hospital to open the Queen Mary building (Albert Levy wing) and lay the foundation-stone of the extension of the Alfred Langton home for nurses.

West London Medico-Chirurgical Society.

Sir Thomas Horder will deliver the Cavendish lecture before this society at the Kensington Town Hall at 8.15 P.M. on June 24th. His subject will be the Present Position of Therapeusis in Infective Diseases.

The fiftieth anniversary annual dinner will be held at the Hotel Rembrandt, Brompton-road, on Friday, July 8th, at 7.30 for 8 P.M.

Chadwick Trust.

Weather permitting, an open-air lecture on the Contribution of Plants to the Study of Heredity will be given in the Chelsea Physic Garden, Swan Walk, Chelsea, by Dame Helen Gwynne Vaughan at 5 P.M. on Thursday, June 9th. Sir William Collins will preside, and the gardens will be open at 4 P.M. If it rains the lecture will be given indoors.

Sputum Examinations in Manchester.

The Manchester public health committee have decided to discontinue the payment of fees to practitioners for taking specimens of sputum from patients whom they are attending. It is not intended to discourage the taking of sputum specimens, and the committee feel that cessation of the payments will not deter practitioners from submitting specimens whenever they consider it advisable. The usual fees—namely, 2*s.* 6*d.* for a specimen taken in private practice and 1*s.* for hospital practitioners—will still be paid where specimens are taken at the request of the medical officer of health.

Donations and Bequests.

Mrs. Kate Greatorex, of Mytton Hall, near Shrewsbury, Salop, besides other bequests, left the following legacies: £5000 to the Victoria University of Manchester, and a further £3000 to that University for scholarships for applied and organic chemistry, to be known as "Joseph Travis Scholarships"; £1000 to the Manchester and Salford Hospital for Skin Diseases for endowing a room or bed to be named the "Kate Greatorex" room or bed; £500 to the Manchester and Salford Blind Aid Society; £500 to Shrewsbury Royal Infirmary; £500 to the Oldham Infirmary in memory of Mr. Joseph Travis, and £500 to the Mauldeth Hospitals for Incurables.—Under the will of the late Mr. F. W. Vause the University of Leeds will receive £1000 for the foundation of an entrance scholarship in medicine in memory of the testator's son, who was killed in the war; and a prize in clinical medicine will be established under the will of the late Dr. Hillman, of Wakefield, who left £1000 for that purpose.—Sir John Rutherford, of Blackburn and Roxburgh, formerly M.P. for the Darwen Division of Lancashire, left £2000 for two beds to be named after him, and £3000 to the endowment fund, and his portrait in oils, by Sir William Orpen, to the Blackburn and East Lancashire Royal Infirmary, as well as £1000 to the Blackburn and District Nursing Association.

NOTES, COMMENTS, AND ABSTRACTS

HOMELESS WOMEN.

SINCE the first Cecil House was opened in 1927 ore than 235,000 women and 23,000 babies have een provided with beds for the night, and many ave had to be turned away owing to lack of accom-odation. The Cecil Houses meet, at cost price, e need for clean beds and bathing and washing commodation for homeless and vagrant women. our houses are now in existence, and the premises r a fifth have just been purchased, which. it is oped, will be open before next winter. Funds for e purchase, renovation, and equipment of houses e raised by public appeals, but once they have een established they rapidly become self-supporting. omen seeking lodging pay *1s.* a night, for which ey receive a bed, a hot bath, tea and biscuits at ight, facilities for washing clothes, and tea and read and butter in the morning. This charge is fficient to maintain the premises, cover all costs d pay the salary of the matron and her assistants hose needing beds are asked no questions, and are ot expected to undertake any of the housework; ey are treated as visitors at an hotel, and they ave the satisfaction of feeling that they are paying eir way. A special fund is kept to pay the expenses needy applicants, and no woman is ever turned way because she cannot produce a shilling. Mothers ppreciate the accommodation for children; few dging houses will accept young children, even if e mother can afford to pay for a bed. A case is uoted, in the annual report of the Cecil Houses for 931, of a workman, receiving good wages, who has een unable to find rooms for himself, his wife, and is four children; as a result he and his two sons ve at one lodging house, while his wife and two aughters find beds at a Cecil House.

Attempts are made to avoid the spread of vermin r disease at the houses by a careful daily inspection bed linen. If vermin or traces of disease are iscovered, bed and bedding are sent to a disinfecting tation. During the past year a woman doctor has ade a fortnightly visit to each of the four houses, nd has given free advice to the women lodging there. hrough the coöperation of friends of the movement, mployment has been found for 673 women and girls ho have come to the Cecil Houses when out of work. lthough no questions are asked, confidences are eceived with sympathy, and the matrons make very attempt to find posts for those in search of hem. Mrs. Cecil Chesterton, founder of the Cecil ouses, pointed out in her book—"In Darkest ondon"—that while municipal bodies provide mple sleeping room at reasonable charges for men, t is left for philanthropy and private enterprise to ater for women. Only 16 per cent. of the total icensed sleeping accommodation in the public odging houses of London is available to women, the est being available to men only. It is to remedy his discrepancy that the Cecil Houses are being stablished.

SCIENTIFIC RIDDLES.[1]

A SCIENTIFIC riddle is peculiar in that the answer nly reveals another batch of conundrums, and it as been well said that a discovery is of moment in roportion only as it uncovers fresh problems for olution. In 52 short chapters, Sir Arthur Thomson eals with an immense variety of topics, gives us a reat deal of information, and outlines almost endless ines of inquiry: chromosomes. hormones, partheno-enesis, life in hot places, grey hair, the cuckoo, homing, galls, graft hybrids, telepathy, animal intelligence, evolution, the origin of man: *de omnibus rebus*, in fact *et quibusdam aliis*. The last chapter is headed: Is there purpose in evolution? and is followed by an epilogue on the wonder of the world. This is one of the best of the many good books on biology which Sir Arthur Thomson has written.

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[1] London: Williams and Norgate, 1932. Pp. 384. 10*s.* 6*d.*

DEEP-SEA DIVING.

THE Admiralty Deep Diving Committee of 1907—consisting of Prof. J. S. Haldane, Prof. A. E. Boycott, and Captain G. E. C. Damant, R.N.—found that caisson or compressed air disease is due to too rapid decompression of the diver; the nitrogen which has been dissolved in his body at high pressures escapes as the pressure falls and forms bubbles in the tissues. The committee arranged decompression regulations which made it safe for divers to work for an hour at a depth of 200 ft. That was a great advance, but the necessarily long period of decompression was tedious and exhausting to the diver who, coming up from 200 ft., spent a couple of hours hanging on to a rope in cold, loneliness, and darkness. When diving at even greater depths was called for, this disadvantage had to be faced, and Surgeon Lieut.-Commander A. E. Phillips recently told the United Services Section of the Royal Society of Medicine[1] what has been done to make deeper diving between 200 and 300 ft. practicable and safe. Working at 300 ft. a man is under a pressure of, and breathes air at, ten atmospheres, the partial pressures being for oxygen two, for nitrogen eight. The nitrogen is the difficulty, and to liberate him quickly from it as he ascends he is nowadays given a nitrogen-free atmosphere—i.e., oxygen—to breathe. Decompression has besides been made pleasanter by the invention of the Davis Submersible Decompression Chamber (Siebe, Gorman and Co.). This is a steel chamber, lowered like a diving bell, into which the ascending diver makes his way, and there, when the hatch is closed, he finds himself in a lighted chamber with one or two attendants who give him an oxygen-breathing apparatus and hot coffee. Sitting there he can play cards or otherwise pass the time of his decompression, which is now shortened by a half or a third. Thus he can spend more time at work and get more done. The work needs a strong man, but is not exhausting, and the diver is definitely refreshed by breathing the oxygen supplied. "One of our divers reached 344 ft. and came to the surface as one might return from an afternoon's walk." No case of oxygen poisoning has occurred; lung fibroses have in every case diminished, and some functional albuminurias have improved. The rubber suit is more useful than the rigid all-metal outfit for rapid work, necessary, for example, when saving lives from a disabled submarine. Lieut.-Commander Phillips gives complete directions for choosing divers, who must be strong men without medical defect, steady, and self-reliant; it is not now thought important to refuse men who are moderately stout.

IS THERE A MALARIAL PNEUMONIA?

WORKING at the Institute for Tropical Medicine at Hamburg, Dr. M. Salah Eldin has endeavoured to answer the question whether malaria can produce definite lesions in the lung. In his paper,[2] written in English, he discusses the post-mortem appearances of eleven cases seen at Hamburg, two of inoculated malaria, nine of unselected chronic subtertian (named in Germany "tropical"). Of these, four were histologically pneumonia, and pneumococci were seen in two. In the other seven the condition was not a fibrinous exudative inflammation, but a congestive proliferative lesion of the alveolar wall; the capillaries were dilated and congested with swelling of their endothelium, and swelling and proliferation of the alveolar epithelium; in one case there were minute multiple infarcts. Malarial pigment was seen, in these cases, in mononuclears in the distended capillaries and in their endothelium: in one case a few were found in the alveoli. Eldin thinks that pneumonia can only with difficulty be differentiated from massive collapse, encouraged perhaps by

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[1] Proc. Roy. Soc. Med., 1932, xxv., 693.

[2] Arch. f. Schiffs- u. Trop.-Hyg., May, 1932, p. 260.

Clinical Course for the M.R.C.P. At 8 P.M. on Mon. and Fri.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Demonstration in Antenatal Treatment, by Dame Louise McIlroy, at 5 P.M.—BUSH HOUSE, Aldwych. Lecture with Cinema demonstration on Epidemic Encephalitis, by Prof. Arthur Hall, at 8.30 P.M. Thurs. (The above courses are open only to Members of the Fellowship.)

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, June 7th.—3.15 P.M., Mr. N. A. Jory: Infections of the Labyrinth.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, June 10th.—4 P.M., Mr. Lowndes Yates: Headache of Nasal Origin.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, June 8th.—4.30 P.M., Dr. Jenner Hoskin: The Senile Heart, its Effect on the Operative Risk.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.

WEDNESDAY, June 8th.—4.30 P.M., Mr. W. D. Harmer: Larynx.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, June 8th.—4 P.M., Dr. W. E. Lloyd: Clinical Types of Pulmonary Tuberculosis. (Lantern lecture.)

Appointments

BOWER, M. DYKES, B.Ch. Oxf., D.O.M.S., has been appointed Honorary Assistant Surgeon, West of England Eye Infirmary, Exeter.

JONES, GWYN R., M.B., B.Chir. Camb., County Pathologist and Bacteriologist, Monmouthshire.

MILNE, Isabella A., M.B., Ch.B. Glasg., Asst. Medical Officer of Health, Blackpool.

ROBINSON, Miss M., M.B., B.Ch., B.A.O. Belf., District Resident Medical Officer, Queen Charlotte's Maternity Hospital.

Vacancies

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, Austral-street, West-sq .S. At rate of £100.
Altrincham un. H.S. At rate of £150 an
Barrow-in-F *'al.*—H.S. £175.
Basingstoke, —Second Asst. M.O. £450. Also Jun. Asst. M.O. £350.
Bedford County Hospital.—Second H.S. At rate of £140.
Birmingham Children's Hospital.—Res. Surg. O. £175.
Birmingham City Mental Hospital.—Jun. Asst. M.O. £350.
Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.
Bradford Royal Infirmary.—H.P. and H.S. Each at rate of £135.
Brighton County Borough, Public Assistance Committee, Poor-law Institution.—Res. M.O. £850 and Sen. Res. Asst. M.O. £400.
Burnley, Victoria Hospital.—H.P. At rate of £150.
Burton-on-Trent, Bretby Hall Orthopædic Hospital.—Locum. At rate of £350.
Bury and District Joint Hospital Board.—Asst. to Med. Supt. £400.
Bury Infirmary, Lancs.—Third H.S. At rate of £150.
Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.
Cardiff, City Lodge Institution.—Asst. M.O. £150.
Carlisle, Cumberland Infirmary.—Second H.S. £155.
Carmarthen, Joint Counties Mental Hospital.—Laboratory Asst. £150.
sing Assoc.—Asst. Supt. £90.
—H.S. and H.P. Each at rate of £150.
, 7, *Buckingham Palace-gardens, S.W.*—
Psychiatry. Each £150.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Colchester, Essex County Hospital.—Asst. H.S. £120.
Dewsbury and District General Infirmary.—Second H.S. £150.
Doncaster Royal Infirmary.—Cas. H.S. At rate of £175.
Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110.
Durham County Council Education Department.—Asst. Oculist. £500.
East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £200.
East *en, Shadwell, E.*—H.P. and H.S.
Eveli *ildren, Southwark, S.E.*—Hon.
Exeter, Royal Devon and Exeter Hospital.—Sen. and Jun. H.S. At rate of £250 and £150 respectively.
Freemasc *Home, 237, Fulham-road, Chel* ite of £250.
Fulham *Hammersmith, W.*—Clin. Asst. At rate of £100.
Halifax, St. Luke's Hospital.—Jun. Res. M.O. £250.
Hammersmith Hospital, Ducane-road, Shepherd's Bush, W.—Res. Asst. M.O. £350.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.S. At rate of £100.
Hôpital and Dispensaire Français, 172, Shaftesbury-avenue, W.C. Jun. Res. M.O. £100.
Hull Royal Infirmary.—Third H.S. At rate of £150.
Indian Medical Service.—Appointments Commission.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liverpool Hospital for Consumption and Diseases of Chest.—Asst. M.O. and Pathologist. £150.
London University.—Laura de Saliceto Studentship. £150. Also Examinerships.
Middlesbrough, North Ormesby Hospital.—H.P. £120.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E. Assist. Cas. O. At rate of £125.
Miller General Hospit Cas. O. At rate of £150. Also tw at rate of £100.
National Hospital, st. Pathologist. £250.
Newcastle General Hospital.—H.S. At rate of £150.
Northampton General Hospital.—H.S. At rate of £150.
Nottingham General Hospital.—Res. Cas. O., also H.S. At rate of £200 and £150 respectively.
Paddington Green, Children's Hospital, W.—H.P. and H.S. Each at rate of £150.
Plymouth, Central Hospital.—Res. H.S. At rate of £150.
Preston, Lancs, Biddulph Grange Orthopædic Hospital.—Jun. H.S. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Asst. Phys.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.
St. George-in-the-East Hospital, Raine-street, Wapping, E.—Res. Asst. M.O. £350.
St. Mary's Hospital for Women and Children, Plaistow, E.—Two Hon. Asst. Phys. Also Clin. Asst. for Med. Outpatients' Dept.
St. Mary's Hospital, W.—First Asst. Pathologist. £500.
St. Peter's Hospital for Stone, Henrietta-street, Covent Garden, W.C. Clin. Assts.
Salford.—Asst. Res. M.O. for Hope Hospital, Pendleton. At rate of £250.
Salford Royal Hospital.—Med. Reg. £250. Also H.P.'s and H.S.'s. Each at rate of £125.
Salisbury General Infirmary.—Two H.S.'s. Each £150.
Sheffield City.—Asst. Tuberculosis O. £350.
Sheffield, Jessop Hospital for Women.—H.S. At rate of £120.
Southampton, Royal South Hants and Southampton Hospital.—Radium Officer. £600. Also H.P., 2 H.S.'s, and Cas. O. Each at rate of £150.
South Shields, Harton Hospital.—H.S. £150.
Warrington Infirmary and Dispensary.—Jun. H.S. £175.
Warwick, King Edward VII. Memorial Sanatorium, Hertford Hill.—Jun. M.O. At rate of £200.
West End Hospital for Nervous Diseases, Regent's Park, N.W.—Jun. H.P. At rate of £100.
West London Hospital, Hammersmith-road. W.—H.P. and H.S. Each at rate of £100.
66, Fitzjohn's-avenue, Hampstead.
Sanctuary, S.W.—H.S. to Eye and Ear, Nose and Throat Depts. At rate of £102.
Weston-super-Mare General Hospital.—Res. H.S. £150.
Windsor, King Edward VII. Hospital.—Two H.S.'s. Each at rate of £100.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. and H.S. Each at rate of £100.
Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Romford (Essex); Slaithwaite (York, West Riding); Huddersfield, West (West Riding); Lenham (Kent); and at Broughton (Hampshire).

Births, Marriages, and Deaths

BIRTHS.

JAUCH.—On May 27th, at Grantham, the wife of F. J. Jauch, F.R.C.S., of a son.

NICHOLSON.—On May 22nd, at Park-road, West Hartlepool, the wife of Dr. W. A. Nicholson, of a son.

SIMONS.—On May 20th, at Plymouth, the wife of Major G. E. L. Simons, R.A.M.C., of a son.

MARRIAGES.

SEARS—GOULD.—On May 28th, at Thornton Heath Wesleyan Methodist Church, W., Gordon Sears, M.D., M.R.C.P., to Eileen Gould.

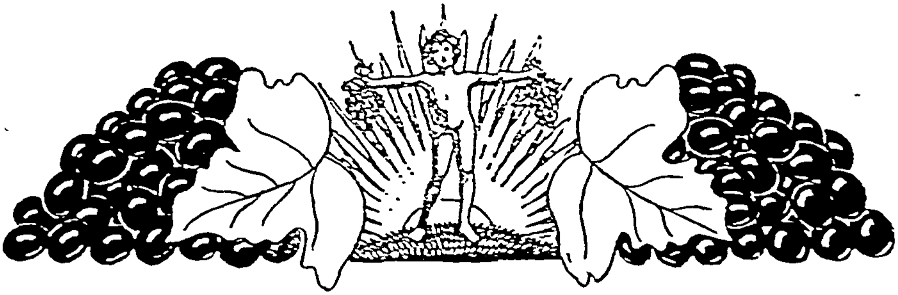
DEATHS.

FAWSITT.—On May 26th, at his residence, "Holmfield House," Oldham, Thomas Fawsitt, M.R.C.S., L.R.C.P., in his 87th year.

McCALMAN.—On May 18th, at the Chaplain's House, Welbeck, Worksop, Notts, Lieut.-Col. Hugh McCalman, M.D., I.M.S. (retired), aged 82 years.

WATNEY.—On May 28th, at Buckhold, Pangbourne, Herbert Watney, M.D., F.R.C.P. Lond., aged 89.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.



IS INCOMPLETE EVACUATION A SOURCE OF DANGER ?

It is authoritatively stated that " completeness of evacuation is even more important than regularity of evacuation." Many people who report a daily bowel movement yet manifest and experience the symptoms and discomfort characteristic of constipation. Laymen are not always good judges of adequacy in this matter.

If this partial retention of waste is allowed to continue uncorrected, an atonic habit is created, and the constipation tends to become aggravated. In such cases, ENO's " Fruit Salt " has been found of great value, being mild and unirritating, though effective, in its stimulant action on peristalsis. It may safely be taken, even over long periods of time, without injury to the mucous lining of the bowels or to the sensitiveness of the nerve-endings. ENO is entirely free from the harsh mineral sulphates, Epsom and Glauber salts. It is agreeable and refreshing to the palate ; and is found by many strikingly to promote a feeling of fitness and general well-being.

ENO'S "FRUIT SALT"

J. C. ENO LTD., 160 PICCADILLY, LONDON, W.1 malarial splenitis; the lessening of this during the remission would explain the intermittent nature of the symptoms. He concludes that true pneumonia in a case of malaria is due to an additional infection. The malarial parasite cannot produce in the lung a fibrinous exudative inflammation, but a lung with malarial lesions (proliferative congestion of alveolar walls) is liable to secondary infections. Malaria attacking the lung leads to congestion and œdema or to massive collapse, usually mistaken for pneumonia. He adds that pneumonia is not due to malaria, and he quotes, apparently with approval, the opinions of authors who argue that malaria does not prepare the way for tuberculosis.

PROFESSIONAL SIDELIGHTS.

FOUR small books, three English and one American, have reached us dealing with the attitude, professional and social, that the doctor should adopt towards his patient and the public.

Bedside Manners. By CHRISTOPHER HOWARD, M.R.C.S., L.R.C.P. London: John Bale, Sons and Danielsson, Ltd. 1932. Pp. 104. 3s. 6d.—Having read Mr. Howard's "After Consulting Hours," we anticipated with pleasure the perusal of this little volume. We were not disappointed. Mr. Howard writes with an agreeable air of broadmindedness, of humour, and of shrewdness, and although some of his opinions here expressed will arouse controversy, even those who are in opposition will enjoy his pages. We cannot imagine many surgeons failing to be stirred to denial by his demonstration of the discrepancy in their favour between the fees of surgeons and of physicians. Nevertheless, we believe he is right in the main. Those who want to be able to say what they mean by a bedside manner will find an amusing and just account in the first chapter, and those who want a sensible view of the constituents of real success will meet it later on. Mr. Howard is amusing but not flippant, and he shows a sincere appreciation of the true value of the genuine practitioner, just as he does an admirably expressed depreciation of him whose shop window is impressive but whose stock-in-trade is scant. He has wise observations on punctuality and the latest methods, and foreign study and specialisation, and there must be few medical men who will not thoroughly enjoy their hour with this little book.

A Guide to General Practice. By A. H. DOUTHWAITE, M.D., F.R.C.P. Lond., Assistant Physician to Guy's Hospital. London: H. K. Lewis and Co., Ltd. Pp 96. 4s. 6d.—Dr. Douthwaite's little book has a large scope and deserves its important title. In the first place the advice to those entering general practice and on the business aspect of the general practitioner's life, is exactly the sort that senior students and young doctors require—it is, in the author's words, a "recognition that a dangerous hiatus exists between the intensive hospital education of the medical student and the hard won self-education of the experienced medical practitioner." The methods of choosing and entering a partnership are illustrated by the inclusion of a typical partnership agreement of a complicated sort. It is an agreement entered into by an incoming partner (X) replacing one who is retiring (B), and joining three partners of whom (A) and (S) have equal shares, and (T) a smaller part. (X) is unable to pay the full purchase price on entry. It is a good mental exercise to follow the clauses of this agreement and see how fair interplay was secured between (A), (S), (T), and (X). The advice given on the conduct of general practice, with which the book closes, is sound.

The Surgeon. By C. JENNINGS MARSHALL, M.D., M.S. London: Geoffrey Bles. Pp. 192. 3s. 6d.—This is the latest volume of the Life and Work Series, and inside its small compass a fair general picture is given of the surgical profession in England to-day. There is wise counsel to the student on the qualities which he should cultivate before qualification, and the chapters which follow on the risks of operations, and on their performance and after-treatment resume generally held views in a pithy manner. The chapter entitled "The Need for Operation" is full of good sense, the well-known difficulty of deciding between the various arguments that make for and against surgical interference being well set out.

The Young Doctor Thinks Out Loud. By JULIAN PRICE, M.D. London: Appleton and Co. Pp. 187. 5s.—Dr. Price points out that the working hours of the medical student between 18 and 28 are so crammed with the collection and application of information that he has little time to do original thinking, and he proposes to think for him. The result is a series of chapters dealing with the choice of medicine as a profession, with the preliminary and technical education necessary, with the value of holding of appointments, with the experiences of an entrance into general practice, and with the decision to become a specialist. Here we have set out briefly professional ideals and performances in the United States, and the close similarity with which analogous positions are regarded on each side of the Atlantic shows once again how international a thing sound medicine must be.

THE FEAR OF A HIGH BLOOD PRESSURE.

THANKS to the publicity given to the condition of blood pressure in the popular press there are at this time a large section of people whose lives are a constant burden to them because they have at some time or another been told they are suffering from a high blood pressure. Dr. C. L. Andrews has written a book[1] in a style that any layman can understand, expressly for these unfortunates who, to quote his own words, "are the victims of blood-pressure psychology, and who because of hearsay, misinformation, and inability to separate cause from effect live in constant fear of some impending body calamity which may never occur, so far as blood pressure is concerned." There are those who will consider that such a book will tend to make the person who reads it more introspective as regards his health. By making it possible for any layman to get an intimate knowledge of this one disease it may help to exaggerate its importance rather than, as is hoped, to lay its ghost. But before condemning the book on these grounds it should be remembered that the unknown always hold more terrors than the familiar, and that knowledge should dispel superstition.

The book is very readable, and should be easily understood by anyone with average intelligence. The first two chapters explain the meaning of blood pressure and its relation to the circulation of the blood. Then follows an explanation of how blood pressure is estimated, and what is the normal reading at various ages. This is followed by two chapters dealing with high and low pressure respectively, the subject being made more easily understood by an analogy with the motor-car. The last part of the book is devoted to causes of high and low pressure, and their relation to the facts and functions of daily life. The author states that if he has convinced his readers that blood pressure itself is not a disease his mission will be fulfilled.

A REFERENCE LIBRARY FOR MIDWIVES.

THE honorary librarian of the Midwives' Institute writes to ask any medical man who is giving up practice or weeding out his library, to bestow upon the institute any medical works—especially textbooks on gynæcology, obstetrics, anatomy, hygiene, or public health—that he no longer requires. The institute would gladly defray the cost of packing and transit. A reference library of about 900 volumes has already been built up with the help of books from friends in the medical profession. The address of the Midwives' Institute is 12, Buckingham-street, Strand, W.C.2.

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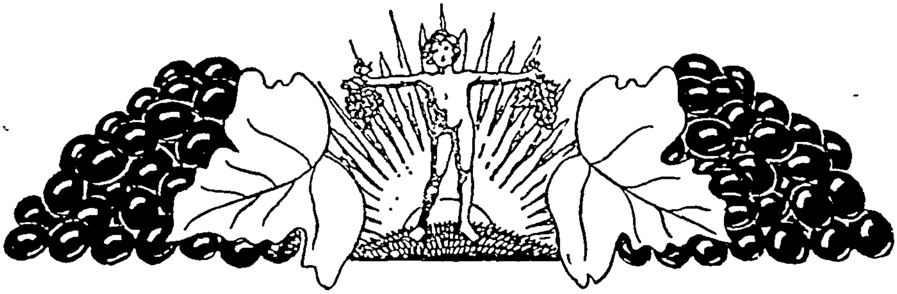
[1] *How's Your Blood Pressure?* By Clarence L. Andrews, M.D., Attending Physician and Medical Chief at the Atlantic City Hospital. London: Macmillan and Co., Ltd. 1931. Pp. 225. 12s. 6d.



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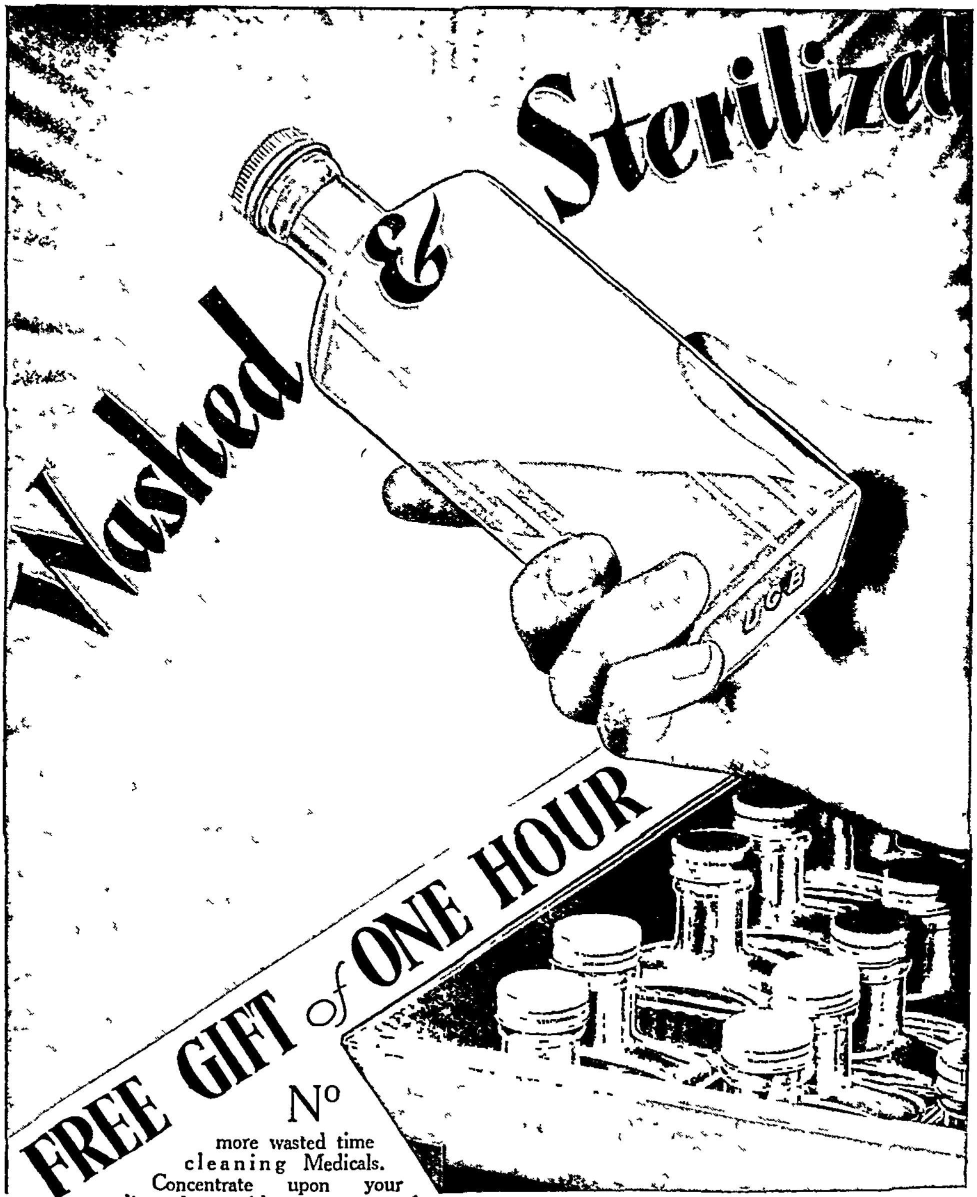

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ADDRESSES AND ORIGINAL ARTICLES

THE OBSTETRIC FORCEPS AND ITS USE*

MABEL DOBBIN CRAWFORD, M.D., M.A.O. DUB.,
F.R.C.S. IREL.,

HON. ASSISTANT SURGEON TO THE LIVERPOOL AND
SAMARITAN HOSPITAL FOR WOMEN, AND TO THE
LIVERPOOL MATERNITY HOSPITAL.

his communication is a result of my experiences he Liverpool Maternity Hospital during one week.

was called to an emergency—a failed forceps . I found a patient with contracted pelvis and ost-mature fœtus: no chance of delivery by ral means. The maternal trauma was slight, fœtal heart good. I delivered by Cæsarean on, only to find that the baby had bled copiously one ear, there being a stellate fracture of the etal and sphenoidal region of the skull. Although heart continued to beat for a few moments, the d never breathed.

few nights later my maid brought me the very message that I was wanted at once at hospital another of those failed force” cases. Two ors had brought a woman by ambulance and me the following history.

> e patient was a primigravida, aged 42. After 20 hours e first stage of labour the senior practitioner considered had suffered long enough and put on forceps. His strength failed to deliver her, and he summoned a colleague to try the power of his younger muscle. also failed. Hæmorrhage began, a constant trickle. called an ambulance and brought the woman into al, a distance of some 14 miles, bleeding continually whole way.

und her blanched and still bleeding, with a ady pulse and pulse-rate of 140. The cervix only three-quarters dilated and torn in three es; one tear, the length of my finger, extended the left fornix, and there was also a deep lacera- in each side of the vagina. The vertex was enting, free above the brim, the fœtus post- ure, and the pelvis contracted, the diagonal ugate being less than 4. A craniotomy saved mother, but there was no reason why, with ante- l care, a Cæsarean section should not have d the infant too—a desirable result in a primi- ida of 42 years of age.

thereupon decided to investigate these cases.

Proper Use of Forceps

he obstetric forceps—applied when the signs are urable—is an instrument of mercy. It is easy se, and by its aid a woman may be saved much ring. Yet eminent obstetricians have seriously tioned whether women would not be better off this instrument never been invented. For in itable cases or at an improper time the forceps lethal weapon whereby thousands of living ies have been killed and scores of mothers ght to the door of death. Because this instru- is so perfectly adapted to the proper case, vering a woman so readily and without injury nother or child, it always conveys the impression useful tool, assuming an appearance of innocence ote from its true character.

he art of obstetrics is practised more by rule-of- mb than any other branch of medicine, it being inevitable that a science which has grown steadily through the centuries should impose upon its practitioners certain rules which cannot be violated with impunity. The obstetrician, then, needs only to make an accurate diagnosis and his course lies clear before him. The rules for the application of forceps are four.

1. Forceps may only be applied during the second stage of labour—that is, when the cervix is fully dilated and taken up. I find a common misconception on this point. Our house surgeons will sometimes write upon a case sheet: patient in second stage, cervix fully dilated—*anterior lip œdematous*. This, of course, is nonsense. The cervix is not fully dilated if a lip can be felt anywhere. Moreover, if a small rim can be felt anteriorly there will almost certainly be a larger rim present behind.

In rare instances, where every other condition is favourable and delivery urgent, it may be permissible to incise a thin margin of cervix, but it is never justifiable to drag a fœtus through a partially dilated os; the resulting lacerations may cause the mother's death or turn her into a chronic invalid.

2. The second rule is that the head must be fixed and the largest presenting diameter must have passed through the pelvic brim. The forceps, ideally, is an instrument for lifting the fœtal head over the perineum. It may be applied on occasion to the head in the middle strait—that is fixed, the largest diameter through the brim but not yet descended to the perineum. The application of forceps to a head above the brim is absolutely unjustifiable: the instrument so used is a compressor, whereas its proper function is that of traction only.

The application of forceps is only a success—as stated by Berkeley—when their use leaves the mother no worse off than she was before their application, and when the child is born alive. If the maternal efforts fail to mould the fœtal head through the pelvic brim, then the dragging-through of that head by means of forceps is as certain to kill the child as a craniotomy, and far more liable to injure the mother. Choice must rest between correction of malpresentation, Cæsarean section, or craniotomy—or, perhaps, pubiotomy.

3. The presentation must be favourable, vertex with the occiput anterior. Occasionally the use of forceps is permissible in face presentation where the chin is to the front; in brow, where the whole head has passed into a roomy pelvis; or, rarely, in a vertex presentation with the occiput posterior.

4. The membranes must have been ruptured.

An Analysis of 100 Cases

In order to demonstrate the frequency of the abuse of this beautiful instrument and to illustrate the results of forceps applied in unsuitable cases, or at a wrong time, I have analysed the histories of the last 100 patients who were sent into the Maternity Hospital as emergencies, after attempts at delivery by forceps had failed. Five of these cases had been attended by our own house surgeon on the district; the remaining 95 were sent in by doctors in private practice. I am much indebted to my colleagues at the Maternity Hospital for permission to investigate their cases with my own. They occurred during a period of seven years.

Antenatal Care.—In no case had the mother attended an antenatal clinic in the hospital; twelve women had attended outside clinics, four had ceased

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A paper read before the Liverpool Medical Institution.

attendance early, and one had been advised to come into hospital for confinement but had refused.

Parity.—As to parity, 42 were primigravidæ and 58 multigravidæ. If dystocia occur in the first labour one is more anxious as to the shape and size of the pelvis, while in the multigravida anxiety is concentrated upon the size of the fœtus and the condition of the uterine muscle. The multiparous uterus is more likely to rupture in the presence of any obstruction to delivery. One woman was in her twentieth pregnancy, two in their fifteenth, one in her fourteenth, one in her twelfth, three in their tenth, and five in their ninth pregnancies.

REASONS FOR APPLICATION OF FORCEPS.

The reasons given for forceps delivery are set out in Table I.

TABLE I.

(*A*)	None			20
(*B*)	Disproportion—			
	Post-maturity	54		
	Occipito-posterior	29	58	
	Contracted pelvis	22		64
	Hydrocephaly		3	
	Brow		3	
(*C*)	Prolapse of cord			5
(*D*)	Face presentation			9
(*E*)	Impacted breech			1
(*F*)	No note, born before admission			1
				100

(*A*) In 20 cases there was no discoverable reason why forceps had been applied. About half of these had a slow first stage, but that is no indication for forceps. One case showed a remarkable error in diagnosis.

The woman was having twins; one child having arrived there was a little delay, and the midwife sent for a doctor. He came, put on forceps which slipped off repeatedly, and sent the woman into hospital. On admission she was found to have the second amniotic sac intact, the head ballotting freely above the brim, so that forceps must have been applied outside unruptured membranes. All this patient needed was a puncture of the membranes, whereupon she delivered herself with ease.

(*B*) There were three main factors in *disproportion*—namely, post-maturity, occipito-posterior position, and contracted pelvis. In three cases the disproportion was due to hydrocephaly, and in three cases to brow presentation.

Post-maturity.—Of the 100 mothers, on admission four were premature, 42 at term, and 54 were post-mature. It may be a very serious thing for a woman to go past her time. Not only does the fœtal head increase in size, but there is a marked increase in calcification. In one of the cases in my series 44 weeks had elapsed since the last menstrual period, and during the post-mortem examination of the infant the calvarium could only be removed by means of a saw. The post-mature fœtal skull permits of very little moulding. With the varied means at our disposal for the induction of labour at term, no woman need run this risk of difficult labour if she consults a doctor during her pregnancy. The prevention of post-maturity alone would justify antenatal supervision.

Occipito-posterior position (29 cases).—In a vertex presentation, a posterior position of the occiput is always accompanied by incomplete flexion of the head—that is to say, the lowest part of the head is not actually the vertex, but rather the anterior fontanelle, or some part between the anterior fontanelle and the vertex proper. Were the head well flexed and the vertex advanced the latter would be turned forwards by the action of the muscles of the pelvic floor. This incomplete flexion may be the cause of dystocia, for the engaging diameter is the fronto-occipital, averaging 4½ inches, instead of the suboccipito-bregmatic, which averages but 3¾ inches.

Given sufficient time, most cases of occipito-posterior position will result in spontaneous rotation and delivery, failure occurring where the uterine contractions are feeble, or where the pelvic floor has been damaged in previous confinements. The proper treatment of a posterior position of the vertex may be undertaken during the last weeks of pregnancy. Before labour starts the patient should lie upon her other side during her hours of rest. Very commonly the back of the fœtus and the occiput will rotate to the front, as a result of this postural treatment alone. It is so successful that we very seldom employ the pad and binder method of Buist, which, although it has many successes to its credit, is a very uncomfortable procedure for the patient. I have seen at least one case where the fœtus was made so unhappy that it turned from a vertex presentation to a breech.

During labour, and after the head has fixed, the patient should lie on the same side as the occiput, that gravity may favour its descent and rotation. Plenty of time should be allowed. It may be wise to leave the patient for several hours in the second stage, giving sedatives for uterine inertia, that vigour may be renewed after a rest. I do not think it can be sufficiently emphasised that obstetrics cannot be done by the clock. Signs of fœtal or maternal distress are an indication to complete delivery, not the duration of labour. If signs of distress appear, the head should be rotated manually, one hand in the vagina grasping the occiput and coaxing it round while the fœtal body is rotated in the same direction. Manual rotation may be followed by spontaneous or by forceps delivery.

Very rarely forceps may be applied to a head in the occipito-posterior position. The head will usually rotate as it descends, when the forceps may be taken off and reapplied.

Of these 29 cases all but seven were complicated by post-maturity or contracted pelvis or both. Delivery was effected in hospital as follows: in 8 cases by sedatives (spontaneous rotation and delivery); in 6 by manual rotation and forceps delivery; in 5 by forceps delivery, the head rotating during the operation in 2 cases; in 3 by Cæsarean section; and in 7 by craniotomy; 14 infants died or were stillborn; 4 mothers died.

The *pelvis was contracted* in 22 cases, the contraction in nearly all being of minor degree, the diagonal conjugate measuring from 4 to 4½ inches. In this minor degree of pelvic contraction a normal head will very commonly mould through the brim if the fœtus be not post-mature. Progress will be aided by placing the mother in Walcher's position during the second stage. If there be disproportion, and if, with the progress of labour, the head is not moulded through the brim, forceps must not be used, for under these circumstances it is only an instrument of trauma.

Pelvic contraction should be discovered during pregnancy. The best time to examine the pelvis is between the thirtieth and thirty-sixth weeks. Earlier, the maternal parts may not have softened sufficiently to allow palpation of the sacrum, while after the thirty-sixth week the fœtal head is usually in the way, although it may rise above the brim again as it grows larger. In a normal pelvis the sacral promontory is out of reach when examination is made by two fingers. If there is any doubt in the case of a primigravida, it is wise to examine the pelvis under ether with the half hand in the vagina. This is much better done a week or two before term in order to avoid manipulation during labour.

t cannot too often be repeated that contraction :he pelvis is not an indication for the use of forceps.

a recent congress of British obstetricians and næcologists, when minor degrees of pelvic con-ction were under consideration, speakers con-tulated one another that no mention had been de of forceps as a remedy.

C) *Prolapse of Cord.*—In five cases forceps were d because the cord had prolapsed, with a vertex sentation—*presumably an attempt to rescue the* perilled fœtus. In one case, after admission to pital, the cervix only admitted two fingers; the ceps must have been applied outside the cervix. ree of the five infants were stillborn or died. The atment of prolapse of the cord is sometimes very icult, but if the woman be placed in the knee-st position the cord can often be persuaded to up above the presenting part and a tight binder y prevent recurrence. In one case the doctor l very skilfully replaced the cord but, not content h this, had applied forceps three times through a rter-dilated cervix, killing the fœtus and lacerating mother. Once the cord has been replaced there no hurry. Forceps are only indicated when all ditions for their application are fulfilled.

D) There were nine cases of face presentation. ree of these were post-mature, and in three the d had prolapsed during manipulations. In two es, on admission, the leg was found prolapsed ide the head, the result of an attempt at sion. All nine infants were stillborn, and one ther died. Face presentation is not at all favourable, provided the chin is directed forwards turns to the front. The engaging diameter is ial to that in a vertex presentation, averaging inches.

Considerable time must be allowed in the second ge of labour. If the pains are deficient, rest should given by morphia or chloral. It does not matter w many hours are spent so long as the mother is ting and the fœtal heart keeps good. If signs of tress appear, the head should be rotated manually, l may then be born naturally or extracted by ceps. If the head be impacted with the chin sterior, the fœtus will be dead and labour should terminated by craniotomy.

E) The case of *impacted breech* will be mentioned ongst the maternal deaths.

COMMENT ON THESE REASONS.

Considering, now, the rules for the application of ceps, we find that the required conditions were sent in only 4 of the 100 cases. In 52 cases forceps re contra-indicated; in 44 they had been applied soon.

Take the first rule: in 59 cases the woman on mission to hospital was in the first stage of labour, smallest degree of cervical dilatation being a o-finger os. In these 59 cases severe maternal erations were present in 40, the cervix, vagina, d perineum being extensively torn. In one case ceps had so torn the undilated cervix that a large gment of the posterior lip was hanging outside the lva, attached to the uterus by a narrow strip of sue; this woman lived, but was invalided by a lvic cellulitis.

In three cases the uterus was ruptured. In one e child had been born, but the placenta was in the dominal cavity; in the other two the fœtus had rtially escaped through the rent. All three others died. Permanent fistulæ into bladder, ctum, or urethra developed in four cases.

Casual examination will frequently fail to detect the thinned-out cervix of a primigravida.

A friend of mine, called to lend a hand in a difficult confinement, discovered his colleague vastly puzzled *because he could not deliver the woman by forceps,* failing to notice that at each pull not only the fœtal head, but also the cervix showing a half-inch external os, was presenting at the vulva, the forceps being applied to the vaginal vault.

With regard to the second rule, we find that of the 100 cases the head was free above the brim on admission in 36, forceps being therefore contra-indicated. In 34 the head was entering, the largest diameter being still above the brim; the forceps had therefore been put on too soon.

In 27 this condition was fulfilled, the head being fixed in the pelvis. In two the child had been born, and in one the breech was presenting.

It is a good working rule that, if forceps applied once fail to deliver, the diagnosis is at fault. There is no point in repeating the error. Rather should the diagnosis be corrected by examination with the half or whole hand in the vagina while the patient is still asleep. In many of the cases in my series there is no record of this point; it is, however, stated that forceps had been applied once only in eight cases, twice in nine cases, three times in four cases, four times in one case, five times without an anæsthetic in two cases, six times in one case, and several times in four cases. In one case the forceps had been on for two hours, and in one for three hours.

Whatever may be one's opinion concerning anæsthetics in midwifery, the day is surely past when, in a city practice, operation without anæsthetic can be justified. Any doctor who, having a parturient woman at his mercy, puts on forceps without an anæsthetic, and, failing to deliver, repeats the procedure four times, is, in my opinion, deserving of very severe censure. One of these women, we were told, awakened the neighbourhood with her screams, and she quite certainly died within 16 hours of her admission to hospital.

TABLE II.—*Results.*

Cases.	Method of delivery in hospital.	Mothers.		Infants.			
		Survived but morbid.	Died.	Dead on admission.	S.B.	Died.	Survived.
26	Forceps.	2	1	3	9	1	16
7	Forceps after manual rotation.	—	—	2	3	1	3
28	Craniotomy.	5	4	19	28	—	—
9	Cæsarean section.	5	1	—	2	—	7
1	Cæsarean hysterectomy.	—	1	1	1	—	—
1	Hysterectomy, S.B. before admission.	—	1	1	1	—	—
3	Internal version.	3	—	1	3	—	—
20	Spontaneous.	3	—	4	5	4	11
1	Spontaneous after manual rotation, face.	1	—	—	—	—	1
4	Died undelivered.	—	4	4	—	4	—
100		19	12	35	52	10	38
					62		
					100		

RESULTS OF THE MISAPPLICATION OF FORCEPS.

Table II. shows the results of the misapplication of forceps.

Of the twelve mothers who died, five died from sepsis, six from shock, one from paralytic ileus on the fifth day after Cæsarean section. Three were primigravidæ. Of the five mothers who died from sepsis :—

One died on the seventh day after Cæsarean section.

Two died after craniotomy of septicæmia and pelvic cellulitis. One of these was in her ninth pregnancy, the whole trouble being that she was post-mature.

One died a few hours after admission, mother and child showing gross infection with a gas-forming bacillus. This was the primigravida who had had forceps applied five times without an anæsthetic.

The fifth was admitted collapsed, forceps having failed; the fœtus had been turned to a breech and extracted as far as its neck before admission. After craniotomy, the infant weighed 11 lb. The mother had already had seven normal labours.

Of the six mothers who died from shock and hæmorrhage, four died undelivered.

In one, we were told, the fœtus had presented by the brow. Forceps were applied after manual flexion of the head to a vertex and failed. Pituitrin was given twice, and version attempted. The woman arrived in hospital with a pulse-rate of 170, the fœtal head presenting above the pelvic brim, and prolapsed beside it were both arms, one leg, and a loop of cord.

The second was a case of impacted breech. Delivery having been attempted by forceps and by a blunt hook, varicose veins in the vagina and vulva were ruptured and death followed from hæmorrhage, a large hæmatoma forming in the pelvic cellular tissue.

In the third case, the cause of the trouble was post-maturity and occipito-posterior position of the vertex. The mother was shocked on admission to hospital, collapsed during a craniotomy, and died.

In the fourth case the uterus had ruptured while the doctor was trying to extract the second of twins, and the mother was moribund on admission to hospital. This was her ninth labour, the previous eight having been normal.

The fifth mother died immediately after hysterectomy for ruptured uterus, while the sixth to die of shock arrived in hospital collapsed, forceps having been applied during the first stage of labour to a head free above the brim; a torn rim of cervix was still present, and the vagina was torn into the urethra in front with an extensive tear in the posterior wall. The mother was treated for shock and delivered by craniotomy, but died almost immediately. She had previously had five normal labours.

Twenty mothers, treated by sedatives and given rest, were delivered spontaneously, but only eleven of their infants survived. Of the 62 infants who died or were stillborn, three only were macerated at birth. In each of these cases labour had continued for over 60 hours, therefore possibly the fœtus had been alive at the onset of labour. The remaining 59 infants were presumably alive at the onset of labour. Of the 62 infants, 28 were born by craniotomy. The causes of death in the remaining 34 were as follows (Table III.) :—

TABLE III.

Cranial injury—	
[illegible]	6
racranial hæmorrhage	7
[illegible]	1
dying undelivered	4
Prolapse of cord	5
No abnormality found and no post-mortem examination	9
True knot in cord round neck	1
Infection by gas-forming bacillus	1

Nine of the infants who survived sustained birth injuries—two having depressed fractures of the parietal bone and four having cephalhæmatoma.

TABLE IV.—*Failed Forceps Cases.*

		Averages for the Maternity Hospital for the past five years.
Maternal mortality	12 per cent.	1·25 per cent.
,, *morbidity*	31 ,, ,,	6·42 ,, ,,
Fœtal mortality	62 ,, ,,	11·2 ,, ,,

Table IV. shows the mortality and morbidity of the cases in which forceps delivery failed.

If we separate these into booked cases who have attended our *antenatal clinic* and emergencies wh have not, we *get the following* figures :—

	Booked cases.	Emergencies.
Maternal mortality	0·53 *per cent.*	3·92 per cent.
,, morbidity	4·76 ,, ,,	15·0 ,, ,,

I submit that the abuse of forceps, with its tra results, can be avoided by :—

1. Antenatal care—prevention of post-maturity, nition of contracted pelvis, correction of occipito-post position.
2. Accurate diagnosis during labour.
3. Allowance of time and administration of sed during slow labour.
4. Use of forceps only when the cervix is fully the head fixed, and the greatest presenting diameter the pelvic brim, and then only when demanded by signs maternal or fœtal distress.

Anomalies in the Use of Obstetric Forceps

1. The application of forceps is the operation commonly performed in general practice. It is th only operation performed by many pra Many a man who will send a patient to rather than open a whitlow, takes pride in his with the tongs. Yet it is the one common o which many students never see. Under the pres arrangement of providing a fortnight's practica *midwifery* in the medical curriculum, a certa number of Liverpool students, with the 20 cases to their credit, never see forceps appli until they use them themselves in general practice I simply cannot understand this rule: that weeks' residence in a maternity hospital is com pulsory for medical students and another two optional; responsibility rests with the authori who ordain the medical curriculum. It has often stated that the difficulty in teaching midwifer is due to the lack of material—this is not the case Liverpool. If the difficulty is due to lack of dential quarters surely something could have be done about it before this. The experience provide is just about adequate for a student who is to speciali in eyes or orthopædics, or who at any rate is deter mined to undertake no midwifery after he is qualified Surely a student might at least have the option further experience in this department. It is 20 ye since I was a student in another school, but I was qualified I had lived for six months in Rotunda, and attended, not 20, but 120 cases— that experience has stood by me in every case I hav seen *since*.

2. The common use of forceps provides a per example of the proverb : " Out of sight, out of mind. Once the instrument has been applied, its are out of sight and out of touch—so are the and the cervix. Hence it comes that a doctor wh will handle a new-born infant with gentle care, think nothing of applying powerful compressi to a fœtal head, putting his foot against the bed, and, as I have many times been told, pulling wi all his might—and this with the idea of deliverin the mother of a living child. It is an instance extraordinary lack of imagination, and the dates, I believe, from student days. Far too litt time is spent in practical midwifery.

3. Forceps is most often wrongly applied in an effort to save time or to save pain—to shorten the duration of labour. Time is of little or no importance in midwifery, yet to every doctor time is very precious. The ideal obstetrician is one who has no other interests or engagements, who needs no sleep, whose 24-hour day is wholly at the disposal of his patients. Any restriction in time is prejudicial to the practice of obstetrics, yet it is obvious that we must sometimes

ompromise. The point I wish to stress is this: hat if an obstetrician can make an accurate diagnosis, e will be able to compromise successfully and have othing to regret. It is perfectly natural that, when pressed by other work or by agitated relatives, practitioner may say: "For heaven's sake let's et the forceps on and be finished with it!" but, the woman be not ready for delivery, he has failed n his trust, and the punishment, which comes peedily, falls upon the patient. There is no discipline more severe than that imposed by the conscientious practice of obstetrics. Probably the object of saving ime or relieving pain was the reason why forceps were applied in the 20 cases in which we could discover no indication.

This factor is recognised, of course, by midwives. o often, when a midwife brings a patient to see me n her second pregnancy, the first having ended in a orceps delivery, and I inquire why she had forceps n her first confinement, the answer comes, "Because he had engaged a doctor."

4. Forceps is often wrongly applied through rror in diagnosis. Why is it that the idea of putting hand into the vagina to make an accurate diagnosis s more daunting than that of putting on forceps? An anæsthetic is required for either procedure. There is no great difficulty in diagnosis; everyone knows the shape of an infant's head. It is only a matter of careful examination under anæsthesia.

5. Every practitioner is expected to be a specialist n midwifery; he is therefore liable to a loss of prestige if he calls in a second opinion, and when he fails to deliver with forceps at the first try, he is tempted to try and try again, instead of recognising that when forceps fail they are unsuitable.

Occasionally forceps fail because the wrong type of instrument is used. Unless the fœtal head is fixed below the pubis (that is, is distending the vulva), it is quite impossible to pull in the direction of delivery by means of the straight-handled forceps alone. On account of the presence of the perineum, traction with this instrument can only be made forwards and downwards, thus jamming the vertex against the pubic bone and extending the head. If downward traction only be employed, the perineum is severely torn.

The use of an axis-traction handle permits force to be applied in a line continuing the axis of the blades. The pull is therefore an effective downward pull which accommodates itself to the direction of the parturient canal, in which the blades naturally lie. The plane of the blades is indicated by a line upon the shaft, to which an arrow on the axis handle must be kept directed. If the patient be lying upon her back, the pull is made downwards towards the floor, so long as the fœtal head is behind the pubis, and only when the vertex is fixed below the pubic arch may the pull be directed horizontally, and then upwards.

I was called to the hospital one night not long ago. A competent house surgeon had applied straight-handled forceps in a primigravida, under what she considered perfect conditions, and to her astonishment she could not budge the head. I found her diagnosis quite correct; the vertex was presenting with the occiput anterior, the cervix was fully dilated, the whole head in the pelvis. I was told that the scalp had been visible during pains for three hours. Delivery with axis-traction forceps was easily accomplished, without injury to the perineum, and the child was born alive.

6. The appearance of the fœtal scalp during a pain is not necessarily evidence that the head is on the perineum or that the application of forceps is permissible. I have seen the scalp at the vulva when it covered but a projection of a hydrocephalic head, mushroomed above the pelvic brim. We have all been deceived at some time by an enormous caput formed in front of a head impacted in the pelvic brim.

Having, for seven years, done the midwifery of a general practice, I am not ignorant of its dangers, nor of the immense difficulties met with in the single-handed practice of obstetrics. It is by far the most exacting—and always the worst paid—branch of medicine. In what other branch does a surgeon have to be anæsthetist as well? In country practice I have several times given the anæsthetic and put on forceps myself, with no one in the room but a handywoman. The risks undertaken are unpardonable, involving two lives, but until public opinion comes to recognise the importance of obstetrics, the unreasonableness of expecting one brain and one pair of hands to do the work of two, and the absurdity of expecting every newly qualified doctor to be an expert obstetrical surgeon, there will be little decrease in the figures of maternal and fœtal mortality.

In the meantime, however, I see no reason why the misuse of forceps should not disappear from the list of causes of maternal disability and stillbirth.

THE PRESENT POSITION OF PROSTATECTOMY*

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WITHOUT going too far back into the more or less accidental performance of prostatectomy, one may date the intentional operation for removal of obstruction from those put forward almost simultaneously by McGill in this country and Belfield in the United States. These were in the later 'eighties of the last century. They were not prostatectomies as we now think of them, and though performed by the suprapubic route, were only partial operations and for this reason only partially successful. Their incomplete success led to the rise during the 'eighties and 'nineties of the operation of perineal prostatectomy in which the French school, typified perhaps by the work of Proust, played an important part. In America Watson, Alexander, and, at a later date, Young made important contributions to this method of approach. Then at the beginning of the present century came the much more complete suprapubic operation, probably first done by Fuller of New York, but developed and popularised by Sir Peter Freyer. As a development or offshoot of suprapubic prostatectomy came the so-called two-stage suprapubic operation, intermittently done during the first ten years of the century, but perhaps first clearly and strongly advocated by Pilcher. This had for its purpose the division of the operation into two stages, the first of which provided adequate and if necessary prolonged drainage, and the second enucleated the prostate through the little, if at all, enlarged wound, and resulted in a considerable diminution in the mortality, particularly in the less favourable cases. Finally, bringing the matter fairly up to date, one should note the so-called one-stage open dissecting operation, first in the United States clearly described and frequently done by Judd in 1914, and so fully developed and beautifully done by Sir John Thomson-Walker and other British surgeons.

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* An address delivered at the Medical College St. Bartholomew's Hospital, on April 18th.

CERTAIN PRINCIPLES AND THEIR APPLICATION.

In this period of something like 30 years there have become established certain principles, and many of the earlier types of operation have entirely disappeared from present-day practice. Of these principles one may pick out the following :—

(1) *Gradual decompression.*—It is generally accepted that the obstructed and over-distended bladder should be emptied gradually, thereby avoiding the accident of bleeding, but (as I think, more importantly) the resulting acute fulminating infection, involving, if serious, the upper urinary tract.

(2) *Drainage.*—About 30 years ago the importance of preliminary drainage, as a method of improving kidney function and stabilising the conditions in the upper urinary tract, was first clearly stated, and it has become an established principle. It will be obvious that the duration of drainage will depend upon the evidence of derangement of kidney function and the evidence of the ability of the patient to restore the function of the kidney to a reasonably satisfactory level.

(3) Finally, it has become clearly established that successful prostatectomy requires effective *removal of the obstruction*. This may seem elementary, but it must be recalled that the early operations of McGill and Belfield failed because they did not satisfactorily remove the obstruction ; that the convincing success of the operation of Fuller and Freyer was due to the very complete removal of the enlarged portions of the prostate ; and finally, that in those cases in which the prostate is small, fibrous, or contracted, no methods of operation have been as satisfactory as in the cases where there is massive enlargement and the obstructing tissue can be readily and certainly removed.

Bearing these principles in mind, one may dogmatise in regard to the present situation.

Drainage may be established by one of two methods, either by the introduction of an inlying urethral catheter or by suprapubic cystostomy. Urethral drainage is suited to those cases in which it need not be unduly prolonged—a period which may be set at two or possibly three weeks—and in which the catheter can be reasonably tolerated by the patient. Suprapubic drainage is suited to those cases where prolonged drainage, continued for from a few weeks to several or even many months, is indicated in order to stabilise function, and will also be required for those cases in whom the catheter for any reason becomes intolerable. If drainage can be satisfactorily carried out through the urethra we then have at our disposal, as I now believe, two methods of attack. We may either proceed by the now well-known and well-established one-stage suprapubic prostatectomy in which full exposure is obtained, the enlarged portion of the prostate is removed under sight and the bleeding is satisfactorily controlled ; or we may apply a relatively recent, but as I believe important newcomer in this field, a so-called transurethral prostatectomy. It will be noted that I have entirely discarded the operation of perineal prostatectomy, though I am aware that it is still popular with many very able urologists in the United States, and do not doubt that it will continue to remain so for a considerable period. I have, however, come to the conclusion, which at this time I can only state dogmatically, that the newer operation of transurethral prostatectomy will finally push perineal prostatectomy from the stage and that it will do everything which this operation has done for us in the past in an equally satisfactory way and at a lesser risk. For that group of cases which has required prolonged suprapubic drainage we now have, as I think, two procedures at our disposal :—

(1) The *second stage of the so-called two-stage prostatectomy* may be carried out through the suprapubic wound during the earlier weeks without enlarging the wound, and later by moderate enlargement transversely in order to avoid possible injury to the peritoneum. This operation is, of necessity, a blind procedure but has given very satisfactory results in the group of cases in which it has been required, and does not require niceties of exposure essential to the satisfactory control of bleeding in the one-stage operation because the prolonged drainage will be found to have virtually eliminated serious bleeding from the list of possibilities.

(2) *Transurethral prostatectomy.*—Growing experience has, I think, shown that a very considerable group of patients for whom prolonged suprapubic drainage has been required, and for whom, at the time of instituting drainage, it seemed that suprapubic enucleation would be required, will be found after the lapse of many weeks or months with a prostate so shrunken as to come readily into the field admittedly appropriate for transurethral attack. For this group of cases perineal prostatectomy has never appeared to find a large place, though I have never been quite sure why the enthusiastic advocates of the operation did not regard it as a satisfactory procedure for removal of the obstruction even though prolonged suprapubic drainage had been required in the interests of improved and stabilised kidney function.

It will thus appear that I am of the opinion that prostatectomy is rapidly being boiled down to thre procedures : (1) drainage, (2) one-stage suprapubi prostatectomy, or transurethral prostatectomy, an (3) two-stage prostatectomy, either suprapubic o transurethral. I need not burden you with furthe discussion of one-stage prostatectomy or two-stag suprapubic prostatectomy, since they are not new procedures and have become thoroughly establishe in the surgical world. It does, I think, behove m to give some account of the latest candidate fo favour, transurethral prostatectomy, in order t make it clear why I have given it such an important place in the field.

THE TRANSURETHRAL OPERATION.

We should perhaps date the beginning of th procedures which have led up to present transurethra prostatectomy to the introduction by Bottini in th 'eighties of the last century of his cautery knife fo incising the bladder neck. With this instrument introduced through the urethra, an incision was mad through the bladder neck and the obstructing tissu divided by means of an electrically heated blad The operation was difficult of performance, was blind and never became widely popular. The next important step in somewhat the same direction was th introduction by Young, of Baltimore, of his so-calle prostatic punch, an instrument having a large window in its heel and which can be introduced readily int the urethra by means of an obturator. This obturato having been withdrawn, a portion of the obstructin bladder neck then protruded into the window and wa cut away by a circular knife introduced in place of th obturator. This instrument was a very important advance, but as the procedure was not conducted under sight the precise amount and relations of th tissue removed were doubtful, and in a varying but important number of cases troublesome bleeding occurred which might even require suprapubic opening of the bladder for its satisfactory control. An important improvement upon this instrument was introduced by Caulk, who substituted a circular cautery knife for the cold knife of Young, and thus reduced to a minimum or even abolished troublesome bleeding. Except in the hands of its inventor, however, this instrument never enjoyed wide popularity, since the operation was necessarily a blind one and the precise amount of heat developed by the knife was not easily regulated so that there was danger of cauterising the surrounding tissues if the heat was too great, or failing to control the bleeding satisfactorily if the heat was too little. However, the operations of Young and Caulk clearly prepared the field for the developments of recent years. In 1924, Stern, of New York, made an important advance in developing an instrument resembling a cystoscope, by means of which the bladder neck was constantly under view, and through which the introduction of a wire loop, heated by a high-frequency current, could be manipulated in such a way as to pare away portions of the bladder neck. Stern did not succeed in developing this instrument to his entire satisfaction and I believe later abandoned it, but it was pioneer work which has led to the development of a variety of instruments in which the essential principle of complete visualisation of the field and the removal of obstructing tissue by knives, wire loops, or other forms of cutting blade have been developed. At the present time the operation is being done with a very considerable variety of instruments, utilising these general principles. Among the instruments most employed and most successful at the present time may be named those of Davis, McCarthy, and Bumpus. By means of all of these a complete view of the bladder neck is obtained, the obstructing tissue is accurately located and then accurately removed by methods which control the bleeding.

Coming now to the principles involved in this operation, it must be at once admitted that they revert to the earlier types of partial prostatectomy and would seem thereby to expose themselves to the disasters which befell the operations of McGill and Belfield. On the other hand, it will be widely recognised that prostatic obstruction bears little or no relation to the size of the prostate, that very large prostates may produce no obstruction, whereas the most complete obstruction can be caused by glands which show no enlargement and may even be smaller than normal. We are thus forced to the conclusion that it is not the size of the prostate but the position of the obstructing tissue which is important. The work of Young, Caulk, and their modern successors appears to have demonstrated that the obstructing tissue is that which lies between the verumontanum in front and the inter-ureteric bar behind. The success which has apparently attended the transurethral operations which remove tissue in this location suggests that the lateral lobes which are commonly the most palpable and the most obvious play a relatively small part in the obstruction, and there is at least a strong suggestion which can develop into a certainty only with further experience, that even very considerable enlargement of the lateral lobes may be neglected if a clear channel is established through the region above mentioned. The operations with the instruments of Davis, McCarthy, or Bumpus remove the tissue in relatively small pieces, but particularly with the instrument of Bumpus the tissue is not destroyed by electrocoagulation and can thus be submitted to pathological examination which is occasionally important in the discovery of early cases of malignant disease. Davis, whose experience is perhaps the largest, removes large quantities of tissue and does not hesitate to devote considerable time, amounting occasionally to one or even two hours, to the procedure. Bumpus, on the other hand, is satisfied with removal of somewhat less tissue and his operations are of much less duration. In the cases operated by Bumpus and his colleagues at the Mayo Clinic the average weight of tissue removed is about 5 g., the extremes being 20 g. and 1 g.

USES AND LIMITATIONS.

Having thus briefly described the nature of the operation, it is proper to inquire upon what authority it has intruded itself into the field and what are its present limitations. The best evidence of its right to be considered a very important procedure appears to me to rest upon the experience of Caulk, with his, as I think, less satisfactory apparatus, but with an experience going back over 15 years, and more recently upon the work of many urologists other than those above mentioned, who, together, have presented for our consideration a large group of patients showing satisfactory results over periods varying up to as much as ten years. Their accumulated experience appears to me to show conclusively that operations done in this way do in fact satisfactorily remove obstruction. The next important considerations are those of the operative risk and the duration of hospital confinement. There are enthusiastic advocates of the operation who express the opinion that there is no mortality properly attributable to the operation. Our experience at the Mayo Clinic, which now runs to about 250 cases, does not appear to me to justify such great optimism. Our mortality from all causes during a period of six weeks from the operation is somewhat under 3 per cent., and it does not seem to me likely that in any large series of cases a much lower mortality will be obtainable. In any operation done upon patients in this age-group it does not seem to me helpful to attempt to exclude from mortality statistics patients alleged to have died from vascular accident or of intercurrent pneumonia, thought not to be connected with the operation itself. It appears to me wiser to credit ourselves with all of this mortality on the general ground that the patients probably would not have died if no operation had been undertaken. Moreover, I do not think that it is helpful to paint the lily, and if this method of operation will in fact relieve the obstruction at an operative risk between 2 and 3 per cent. it will achieve better results than have yet been forthcoming from any other operation for prostatectomy.

Perhaps one of the greatest advantages claimed, and I think substantiated, from this operation is the relatively brief confinement as compared with any other method. At best the perineal operation confined patients for a period of three to four weeks, not including the period of drainage. For the suprapubic operation a somewhat longer period was generally necessary. The transurethral operation can be expected to require confinement varying from three or four days to two weeks at the maximum, and averaging between seven and ten days. At the end of this period the patients are up and about, completely emptying their bladders and in a condition safely to leave the hospital and perhaps even the immediate care of the surgeon. This is a very great improvement over other methods and deserves being marked up to the credit of the procedure.

It will doubtless be objected that as only a relatively small amount of tissue is removed recurrence will be more likely. To this one can only reply that recurrence has not been unknown after relatively complete operations by the suprapubic or the perineal route, though it must be admitted that such recurrences were relatively uncommon. It must be admitted that at the present time there is no commanding array of patients treated by this method more than five years ago from whom conclusions can be drawn. There are, however, a considerable number over five years some even more than ten years, in whom recurrence has not taken place. Furthermore, it is not inconceivable that an operation of relatively trivial risk might properly be repeated after a lapse of four or five years and the patient yet be better off than had he been forced to withstand the fundamental disturbance of a more serious operation.

THE FIELD OF APPLICATION OF TRANSURETHRAL PROSTATECTOMY.

It is proper, I think, in conclusion, that I should state my own view as to the proportion of cases of obstructing prostate which may properly be treated by this method. It will generally be admitted that the operation is most obviously suited to patients with small glandular hypertrophies and in general to the smaller types of obstruction. I am still doubtful whether the operation can be satisfactorily applied to patients with very great enlargement of the commissural subcervical glandular structures, in general the group commonly referred to as median lobe enlargement. Some of these enlargements reach very great size and project backward, entirely covering the trigone and in some cases are more or less pedunculated. For this group I have hesitated to advise transurethral prostatectomy, though I am aware that it has been successfully employed in such cases. For the present at least I should prefer for these patients the suprapubic method of attack. I am also hesitant in regard to patients with large lateral lobes which have herniated backward through the vesical sphincter and come to lie in an obstructing position in the mid-line. The transurethral approach seems to me considerably handicapped in dealing with this group. Here suprapubic prostatectomy is at its best and I think further experience, at least, is required before admitting that the lesser procedure will produce wholly satisfactory results. For the moderate enlargements such as would be classified as one and two on a scale of four, I am satisfied that the transurethral attack is well suited and has demonstrated satisfactory results. At the present time at the Mayo Clinic something like half of the cases of prostatic obstruction appear to us wholly suited to this method, and I observe that the proportion which we regard as suitable has steadily increased during the last two years.

Briefly stated then, my opinion is this. I will not, at the moment, go "sled-length" with the enthusiasts who take the view that any obstructing prostate can be satisfactorily dealt with in this fashion. I shrewdly suspect that with growing experience and with the inevitable improvements of technique something like three-quarters of the cases will, within the next few years, come properly within the field of this operation. It will be observed that it is equally applicable to the patient who requires but little urethral drainage and to the patient who has required prolonged suprapubic drainage, that it carries beyond question the lowest mortality of any of the modern operations, and that it appears to give satisfactorily permanent results.

ENDO-URETHRAL TREATMENT OF ENLARGED PROSTATE *

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The history of prostatic obstructions with it manifold sequelæ, near and remote, is a fascinatin one. Not the least interesting feature of this subjec in retrospect has been the types and personalitie of the workers in this field during bygone year How prescient was the clinical sense of these men For, long before surgical enucleation was eve considered, many attempts were made along suc lines as galvano-cautery incision via perineum an urethra, of bars and other prostatic obstructions a the vesical neck.

These discerning attempts were only occasionall successful, not because of mistaken clinical concep but for the very good reason that the collater sciences had not yet developed to the stage wher they could supply the exacting optical and electric equipment essential to this highly technical procedur We are back where our predecessors began and to-day equipped with better instrumental appliances, ar able to accomplish the objective they visualise but failed to achieve.

Fortunately for those of us contemplating th advent of senescence there comes this note o optimism—this pleasant prediction—that prostati obstructive manifestations can and should b recognised at their incipiency, that at such a stage o development, these early indications of later ill may be easily and expeditiously removed by relatively minor and precise surgical instrumenta procedure.

To-day there is crystallised before us the combine efforts of sustained research during the past 50 year The basic concepts were laid down in the early year to be built upon, piece by piece, as time went o Notable among the builders upon that early founda tion are to be mentioned Young, Caulk, Stein, Davis Luys, and Foley.

Some 19 years ago I reported two cases of obstruct ing prostates apparently cured by endo-urethra instrumental measures. The immediate results wer spectacularly successful. Later attempts wer unsatisfactory because of obvious electrical limitations Here the offending prostate was removed by mean of an Oudin high-frequency current.

My early attempts in the development of visualise cutting loops date back to 1922. They are still i our possession, and in the light of subsequent develop ments present an interesting collection. At tha time visibility had to be sacrificed to adequat insulation against spark-gap currents, which rendered cutting electrodes so bulky as to be impractical Neither did I regard the direct or indirect type of vision incorporated in the endoscopes of that day as wholly suitable. It was not, therefore, until the advent of the new amphitheatre or panendoscopic system of vision and the later development of the revolutionary electrical machine, both of which were devised by Mr. Frederick Wappler, the brilliant son of his distinguished father, Reinhold, that this long sought-for goal could have been approximated.

Whatever success may attend the procedure herein outlined I cheerfully ascribe to Caulk.

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* Read before the Southeastern Surgical Congress, U.S.A., March 7th, 1932.

For it was he who demonstrated that instrumental endo-urethral approach in the management of prostatic hypertrophy was a feasible procedure, and it was the inspiration of his work that, in the face of many discouragements, kept us everlastingly at it.

This new technique constitutes a departure from the methods heretofore described, in that, with amphitheatre vision, one sees the entire prostatic urethra in tubular perspective, as though one looked from an observation car into a well-illuminated tunnel. Thus one sees the number, type, and extent of prostatic boulders that encroach upon its lumen. In simplest terms, with this visual survey in mind and under the most precise observation the cutting loop which is fitted to a rack and pinion, is adjusted behind the obstruction, the cutting current started with a foot switch and the loop withdrawn by means of the pinion near the eye-piece, bringing with it a tubular cast of prostatic tissue comparable in size to the loop. The loop when charged with this new current, cuts under water smoother and cleaner than the sharpest scalpel and what is very important, coagulates superficially as it cuts. It thereby acts, when properly regulated, as an effective hæmostatic agent. Incidentally its trajectory, because of the mechanical arrangement, is as straight and precise as though it travelled on rails.

In other words, 90 per cent. of prostatic encroachments, malignant or otherwise, and however dense, may be regarded as so much plastic material, to be removed seriatim by a loop charged with a new type of cutting current, upon the cutting effectiveness of which the presence of water seems to exert no discernible deterrent action.

The obvious interpretation is that thus equipped one may remould the prostatic urethra at will. This is borne out by the experience of my associates and myself in a large series of cases of all types, from the simplest fibrosis to advanced malignancies, and all degrees of urinary retention. Further, lest there be the slightest misapprehension, the assertion is here made that this procedure is more precise and more surgical than is that of open prostatectomy. It may further be added that adequate provision is made for any eventuality.

The rationale as I conceive it is, that here we have a tubular structure, the lumen of which is encumbered and distorted by irregular encroachments—that we should have tubular vision for its adequate comprehension—that our objective is, or should be, restoration of that lumen to normal or a moderate exaggeration of its normal tubular character. In other words, an operation of canalisation rather than excavation.

It has seemed to me inexpedient to involve this communication with technicalities. It is, however, reasonable to assume that if Caulk, Davis, myself, and others, equally competent, can effect by means of this route, with a negligible mortality, brief hospital domicile, minimal post-hospital morbidity, complete symptomatic relief, functional restoration, and relative permanency to date, in 90 per cent. of all types of prostatics, how much simpler will it be to apprehend such cases at their onset and prevent them from experiencing that period of senile travail, when their mental capacity is at its peak, and their physical resistance in decline? If internists and general practitioners will come to a realisation of the tremendous economical and sociological importance of the early recognition of prostatic obstructive manifestations, and see to it that they are corrected at their incipiency, the sequelæ of prostatism should no longer be a matter of common observation.

FOCAL SEPSIS AS A CAUSE OF NEPHRITIS

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Before dealing with focal sepsis as an ætiological factor in nephritis it is, I think, necessary to make a few remarks in regard to the classification of diseases of the kidneys, and particularly to the term "nephrosis," which was introduced by Müller [1] in 1905, and subsequently approved by Munk,[2] Volhard and Fahr,[3] and others. Three years ago I suggested [4] that, from the clinical standpoint, it seemed difficult to justify this addition to the terminology of kidney disease; and since then Dr. Dorothy Russell,[5] in her excellent monograph on Bright's disease, has shown that, according to the histological evidence, the mild kind of toxic nephritis (mitis) may begin as a pure parenchymatous degeneration or nephrosis. It is well known, of course, that in cases showing both degenerative and inflammatory changes in the kidney even the expert pathologist finds it difficult to determine whether the primary lesion was a degenerative or an inflammatory one.

The modern conception of nephrosis is that of a primary degeneration of the renal tubules without any involvement of the glomeruli. Recently, however, Izod Bennett, Dodds, Robertson, and Baker [6] have suggested that many cases of secondary contracted kidney with death from uræmia may be the result of progressive changes in the glomeruli following severe damage to the tubal epithelium. This is apparently a new interpretation of the old idea that the large white kidney contracts down and becomes the secondarily contracted small white kidney. Clinically nephrosis is associated with much œdema and albuminuria, hypercholesterolæmia, normal retinæ and cardiovascular system, and no disturbance of renal function as estimated by the excretion of urea. Dr. Russell's recognition of nephrosis as a mild type of inflammation of the kidneys (nephritis mitis) again takes us back to the older view that cases with such symptoms are simply subacute manifestations of nephritis. I have, therefore, in this article made no distinction between subacute nephritis and nephrosis when discussing the ætiology and treatment of these conditions.

The term semi-chronic nephritis refers to the contracting stages between large white kidney (subacute nephritis) and small white kidney (chronic parenchymatous nephritis).

Ætiology of Nephritis

It can reasonably be held that there is probably a toxic factor at the root of all cases of Bright's disease. This is well seen in the acute types which follow the acute infective fevers, particularly scarlet fever and diphtheria. Damage to the glomeruli, followed by tubular degeneration, is also caused by the toxins of pregnancy and secondary syphilis, and by tonsillitis and certain chemical poisons. But what we fail, as a rule, to recognise is the fact that in those cases in which there is a transition to the subacute and chronic stages of nephritis there is often a secondary or residual focus of infection in the tonsils, antra, sinuses, teeth, or perhaps the intestines, which may account for the failure of the acute renal condition to subside completely. Moreover, cases of subacute nephritis with marked œdema and albuminuria, and the semi-chronic varieties with less œdema and albumin in the urine, but with some urea retention and cardiovascular changes, are often the result of focal sepsis. These cases usually begin insidiously; their rate of progress varies and, unless the focus of infection is recognised and eradicated at an early stage, a progressive deterioration may occur which sooner or later ends in the death of the patient from pneumococcal infection of the œdematous tissues or from renal or cardiovascular failure.

From the point of view of organismal infection of the kidneys, Rosenow's work on the elective localisation of streptococci suggests that oral sepsis may be the focus of infection of bacteria having selective affinity for the urinary tract. Bumpus and Meisser [7] have described swelling and areas of hæmorrhage and necrosis in the medulla of the kidneys of rabbits after intravenous injection of streptococci from infected teeth or tonsils.

Hartzell and Henrici produced definite suppurative changes in rabbits after inoculation with streptococci, but did not describe anything indicating chronic interstitial nephritis. The presence of chronic inflammatory or degenerative changes, however, would necessitate a long-continued infection, which is difficult to produce in an animal; thus experimental evidence of toxæmic kidney is not very conclusive. In the course of research on streptococcal injections in rabbits, I found albumin in the urine of four of the animals which developed pyæmic joints but recovered under treatment with fixation abscesses.

The details are as follows:—

Rabbit 1.—Normal control—no albumin in the urine.

Rabbit 2.—Twelve months after intravenous injection of virulent hæmolytic streptococci: definite cloud of albumin found in the urine, both on boiling and after acidifying with nitric acid.

Rabbit 3.—Ten months after injection: a faint trace of albumin present; re-examination of the urine eighteen months later showed no albumin.

Rabbit 4.—Three months after injection: a cloud of albumin (0·15 per cent.).

Rabbit 5.—Three months after injection: a definite trace of albumin.

The effect of a toxin upon the kidney depends: (a) upon its virulence; (b) upon the length of time it continues to be excreted, and thus is able to excite degenerative or inflammatory reaction; and (c) upon the resistance of the kidney tissues to toxic action. Although the subacute type of nephritis is the more likely to result from a toxin of comparatively low virulence passing through the kidney over a prolonged period, it is possible that even the very chronic cases, which commence insidiously and do not appear in the consulting-room until marked contraction of the kidneys has occurred, may also be due to this cause.

If in a case of nephritis the tonsils or antra are found to be infected, and if these are promptly and efficiently dealt with by surgical means, a definite cure may result. I have also treated cases of œdema and albuminuria with vaccines made from hæmolytic and viridans streptococci obtained from the stools, but although temporary improvement took place there was always a return of the albuminuria. In all these cases, however, a further examination by the ear, nose, and throat department and by X rays showed infected tonsils or antra. These patients have since been operated upon, and the results obtained will be referred to later. Vaccine treatment is thus only worth trying in cases in which there is definitely no focus of infection in the mouth or sinuses or in which the removal of a focus of infection is an impossibility.

The following illustrates the course of a typical case of subacute nephritis which had become semi-chronic:—

CASE 1.—A girl, aged 16, was admitted to the Medical Unit wards of St. Mary's Hospital, suffering from marked general anasarca, distressed breathing, cyanosis, severe headache, frequent cough with clear sputum, and advanced cardiac failure. The history showed that she had been in good health until eight months previously, when her face became swollen. She was sent to bed by her doctor, but the œdema became general and a month before admission she developed headache, nausea and vomiting, and cough with expectoration which on one occasion was streaked with blood. When I saw her in hospital, her pulse-rate was 112, blood pressure 180/130, apex-beat 1" external to mid-clavicular line in the fifth space, systolic bruit over mitral area, aortic second sound reduplicated, and lungs œdematous. Urine: albumin + + +, and some blood present. Blood-urea 74 mg. per 100 c.cm. Urea-concentration test: maximum concentration 1·5 per cent. and minimum 1·5 per cent. Urinary chlorides content: 0·0936 g. per cent. NaCl. Thus the blood-urea was high, chlorides were retained, and there was moderate impairment of renal function as shown by the urea-concentration test; the high minimum concentration indicates that there was very definite retention of water as well.

Examination of her teeth showed advanced dental sepsis; pus exuded from the gums and, on extraction of the first left lower molar, pus was evacuated from the socket in quantity. Her sinuses were then radiographed, and marked opacity of the right maxillary antrum was found; this was due to the presence of pus and was drained by the extraction of a tooth. The œdema diminished on a diet containing full amounts of protein and the administration of 20 g. of urea every four hours, but her general condition was such that it was impossible to extract any more of her teeth or to deal effectively with the septic condition of her mouth and antrum. The result was steadily progressive changes in kidneys already badly damaged by long-continued excretion of virulent toxins, and a hopeless prognosis.

Towards the end she became more œdematous, and she died from cardiac failure a few weeks after admission.

Autopsy revealed hypertrophy and dilatation of the left ventricle, hypertrophy of the right ventricle, and cloudy swelling of the myocardium. Several small infarcts were found in the lungs. There were about eight pints of fluid in the peritoneal cavity, one pint in each pleural cavity, and ten ounces in the pericardial sac. The kidneys were slightly enlarged, pale, with small subcapsular hæmorrhages, and the cut surface was flecked with yellow in the intermediate zone. Microscopical examination showed a kidney of the semi-chronic type, a contracting stage between subacute nephritis and secondarily contracted small white kidney—the nephritis actis, in the intermediate stage, of Dr. Dorothy Russell.

I am of opinion that if a focus of infection had been sought for at an early stage of the disease, and, when found, had been suitably dealt with, this patient would have recovered. The history, treatment, and course of the next case show why, in my opinion, the discovery of focal sepsis is of such importance in kidney disease, especially in the œdematous cases which have been classified under the name "nephrosis."

CASE 2.—A woman, aged 46, was examined by her local doctor on June 1st, 1930, before her annual holiday; the doctor states that at that time she was quite fit and that her urine was normal, with no albumin in it. Five weeks later she came to the out-patient department complaining of swelling of her legs, and on examining her urine I found it contained albumin. There was no history of previous kidney disease. As her teeth and gums appeared to be healthy, I referred her to Mr. Cecil Graham for an opinion as to the condition of her throat and sinuses. Mr. Graham reported that the tonsils were small but septic, and that both antra were rather opaque—probably infected, and he decided to take her into his wards for operation.

She was admitted to St. Mary's Hospital on July 20th, 1930, but by this time the œdema had increased to such an extent that Mr. Graham did not feel justified in operating, and he transferred her to the medical side for preliminary treatment. On admission to the Medical Unit wards it was found that her legs, body, and face were extremely œdematous. Her urine contained albumin + +, and a little pus. The blood-urea was 17 mg. per 100 c.cm. The urea-concentration test was normal, the maximum concentration being 3·4 per cent. and the minimum concentration 1 per cent. There was a marked defect in water excretion, only 264 c.cm. of the 850 c.cm. taken being excreted in four hours. The specific gravity, however, ranged from 1022 to 1005, and did not remain fixed in the vicinity of 1011, as occurs in the more chronic types of nephritis. The cardiovascular system showed no abnormality.

She was given a salt-free diet with full amounts of protein, and large doses of urea, 20 g. every four hours. The œdema completely disappeared after about a fortnight's treatment on these lines, and on Aug. 15th, she was sent home, as the ward was being temporarily closed. Ten days later, she was found to be more œdematous than ever, so much so that she was unable to wear her ordinary clothes, and she was readmitted in a dressing-gown. Another course of massive urea dosage, however, reduced the œdema again and on Oct. 8th, 1930, Mr. Graham performed tonsillectomy and washed out her antra. Swabs taken at the operation showed hæmolytic and viridans streptococcal infection of the tonsils, but no definite infection of the antra. She was discharged to a convalescent home and has made a complete recovery.

Her present condition is as follows: She states she feels perfectly well; there is no sign of œdema and no albumin, blood, caste, or pus in the urine; blood-urea 26 mg. per 100 c.cm. Urea-concentration test: maximum concentration 2·5 per cent.; minimum concentration 0·3 per cent. She passed 763 c.cm. of the 850 c.cm. of water taken in 6 hours. Heart and vessels normal. Blood pressure: 120 systolic and 82 diastolic. Fundi normal.

This is a classical example of what should be the course of subacute nephritis (nephrosis), but unfortunately the part played by the toxins of focal sepsis in the ætiology of some of the less acute types of nephritis is not as yet generally recognised. I feel convinced that a careful search for septic foci in the mouth, throat, and antra should be made as routine practice in all cases of nephritis, but particularly in the types characterised by much albuminuria and œdema. Moreover, the examination should be carried out by ear, nose, and throat and dental specialists, and radiographs of the sinuses and teeth should not be neglected. Until this is done and the focus of infection, if found, eradicated by surgical means, many cases such as the first one described will continue to go to the post-mortem room instead of to a convalescent home.

It is by no means uncommon also to find albumin in the urine of young persons who are being examined for life insurance or for posts in the Civil Service, banks, and other institutions. Usually there is no history of previous kidney trouble or any infectious disease to which the albuminuria can be attributed. Apart from functional albuminuria, a proportion of these cases may be due to focal sepsis, and no pains in my opinion should be spared to eliminate its possibility as an ætiological factor; failure to do so may result in some form of nephritis at a later date.

REDUCTION OF ŒDEMA BEFORE OPERATION IN CASES OF NEPHRITIS.

Massive doses of urea are necessary for this purpose, and can be given without any ill-effects. It is customary to give 20 g. every four hours until the œdema disappears. Experimenting upon a normal person I found that by giving 30 g. of urea every four hours for 12 doses the blood-urea rose from 28 mg. to 208 mg. per 100 c.cm. after the final dose, and fell to 54 mg. per 100 c.cm. 30 hours later. The amount of urine passed, on an average, in 24 hours, whilst taking this dosage was 3773 c.cm. (133 oz.)—nearly three times the normal output.

In Case 2 the patient took 20 g. every four hours and the blood-urea rose from the normal, 17 mg., to 122 mg. per 100 c.cm. after 11 doses, and fell to 36 mg. per 100 c.cm. 24 hours later. The output of urine was more than doubled during this time, and the œdema rapidly disappeared. Urea in large doses is undoubtedly the best medical method of treating marked œdema in nephritis.

FURTHER CASES ILLUSTRATING THE ASSOCIATION OF NEPHRITIS WITH FOCAL SEPSIS.

The following examples were taken from a series of 20 cases in which a routine search for focal sepsis was carried out, and in every one of which focal infection was found. The cases comprise acute, subacute, semichronic, and chronic nephritis. The results obtained by the removal of septic foci are briefly described.

CASE 3.—Acute hæmorrhagic nephritis. A boy, aged 2½ years. Admitted for sore-throat, due to septic tonsils, vomiting, and marked hæmaturia. Tonsillectomy performed. Three years later the patient was found to have no albuminuria or other sign of nephritis.

CASE 4.—Acute hæmorrhagic nephritis. Girl, aged 3½ years. Admitted for drowsiness, pallor, puffiness of the eyelids, and much blood in the urine. The tonsils were found to be septic and were enucleated. Examined after two years, the urine was normal and the patient had completely recovered.

CASE 5.—Acute nephritis. Boy, aged 4½ years. On the day before admission for removal of infected tonsils he developed swelling of legs and face. On admission: marked œdema of eyelids, abdomen, and legs. Enlarged inflamed tonsils and cervical adenitis. Urine contained 0·4 per cent. of albumin, some blood, and a few casts. Later, discharged to convalescent home without tonsillectomy, and with a little albumin in urine. A year afterwards there was no albumin in his urine, no casts, and he had apparently recovered without the removal of his tonsils.

CASE 6.—Acute nephritis. Girl, aged 11 years. History of a rash, headache, nausea, and drowsiness, five weeks previously, for which she was confined to bed for three weeks. On admission to hospital, on Dec. 14th, 1930, her face was pale and pasty and her urine contained blood and albumin. Renal tests showed normal kidney function. Tonsils enlarged and infected. Tonsillectomy performed on Feb. 22nd, 1931. A case possibly of scarlet fever followed by nephritis; the kidney condition cleared up and there were no signs of nephritis nine months after tonsillectomy.

CASE 7.—Acute nephritis. Girl, aged 9½ years. History of admission to hospital, in January, 1929, suffering from chorea; tonsillar enlargement was noted at the time. Admitted again in December, 1930, for headaches, puffiness under the eyes, and hæmaturia; she also had hyaline and granular casts in her urine, but her kidney function was normal except for some impairment of water excretion. Ten months later her condition was as follows: no œdema, 0·7 per cent. of albumin in urine, a few red blood corpuscles and pus cells, no casts. She refused to come into hospital for tonsillectomy.

Of the above cases of acute nephritis, three recovered completely after tonsillectomy. One has apparently recovered without operation, although he still had large and infected tonsils, and should be operated upon to prevent a recurrence of his nephritis. The other case has a history of tonsillar enlargement not operated upon, and still has some albumin and a few red blood corpuscles in the urine.

CASE 8.—Boy, aged 13 years. He was in hospital in 1927 with œdema and albuminuria due to subacute nephritis. In October, 1929, he still had œdema and 0·15 per cent. of albumin in his urine. No nitrogen retention, but water excretion was somewhat impaired; he passed only 545 c.cm. out of 850 c.cm. taken by mouth in four hours. His tonsils had been removed some years previously. A mixed streptococcal vaccine, prepared from the stool, was used for four months, and the albuminuria and œdema disappeared.

In February, 1931, the patient caught a cold and developed puffiness of the lower limbs; albumin in urine 0·05 per cent. Examination of nose and throat showed infection of the right antrum and a remnant of one of the tonsils. He was operated upon on March 19th, 1931, and six weeks later the œdema and albuminuria had cleared up again. He then developed boils, and a faint cloud of albumin appeared in the urine. A streptococcal vaccine cured the former, but a trace—0·02 per cent.—of albumin remained in his urine for some time. On Dec. 19th, 1931, his urea concentration and water excretion were normal, and he had no albuminuria, no casts, and no œdema. His general condition is greatly improved, and he is back at school.

CASE 9.—Semi-chronic nephritis. Girl, aged 17 years, attended out-patient department on Jan. 14th, 1930, and was found to have swelling of ankles and puffiness of eyes, and albumin in urine. She had been in bed for seven weeks in Princess Louise Hospital when five years of age, suffering from kidney trouble. Examination of her stools showed a mixed streptococcal infection; she received autogenous vaccine treatment for six months and the albumin and œdema disappeared. Two months later a trace of albumin was again found in the urine and her nose and tonsils were examined by Mr. G. D. Robertson, who performed double antrotomy on Sept. 9th, 1931. There is now no œdema of eyes or legs, no albuminuria and no casts in the urine. Her blood pressure is 115/60, and she is back at work.

Case 10.—Boy, aged 16 years. Admitted to St. Mary's Hospital on May 21st, 1929, suffering from subacute nephritis with marked œdema and albuminuria. His urea concentration was good, but of 20 oz. of water taken by mouth, 10 oz. were still retained at the end of ten hours, showing marked defect of water excretion. His blood pressure was 142/108, and there was accentuation of the aortic second sound. Stool examination showed hæmolytic, viridans, and non-hæmolytic streptococci in large numbers. An autogenous vaccine was injected for three months. During this time his urine contained a trace of albumin; his eyelids were slightly puffy, there was some anæmia and he was marked "unfit for school." As the improvement following vaccine treatment was disappointing, his nose and throat were examined and double antrotomy was performed in April, 1931. Condition on Sept. 30th, 1931, was as follows: No albumin or casts in urine; maximum urea concentration 2·6 per cent.; minimum 0·3 per cent.; water excretion good: passed 627 c.cm. out of 850 c.cm. taken by mouth in two hours. He has now no puffiness of eyelids or pitting along shins; has left school and is at work in a camera factory.

Case 11.—Pyelonephritis. Woman, aged 29 years. History of nephritis of six years duration following pregnancy. Admitted on April 20th, 1931, for headache, drowsiness, œdema, dimness of vision, and abdominal pain. Blood pressure 232/190. Hæmolytic streptococci, pus, and albumin in urine. Blood-urea, 43 mg. per 100 c.cm. Maximum urea concentration 2·1 per cent., minimum concentration 0·4 per cent. Water excretion somewhat impaired—passes only 24½ oz. out of 30 oz. of water taken by mouth in six hours. Tonsils which showed marked infection, were removed on May 21st, 1931.

Six months later, cardiac hypertrophy and accentuated aortic second sound present. Blood pressure 228/155. Considerable anæmia. Urine 0·05 per cent. of albumin; a hyaline cast and a pure growth of streptococci of fæcal type were found. She also has uræmia dyspnœa at night and there has been no improvement in her condition following the tonsillectomy and subsequent vaccine treatment. Improvement in this case, however, was not to be expected in view of the fact that the kidneys had been affected for six years and nothing had apparently been done, until her admission to this hospital, to eradicate either the tonsillar or the urinary infection, by which time serious renal involvement had occurred.

Case 12.—Chronic nephritis, woman, aged 24 years. History of diphtheria eleven years ago, followed by kidney trouble, for which she had been detained in hospital for five months. Œdema and albuminuria occurred after childbirth a year ago. Admitted to hospital six months later with albumin, blood, and hyaline casts in urine. Blood pressure 130/90. No œdema. Renal function tests showed no nitrogen retention but some defect in water excretion. Tonsils enlarged; hæmolytic and viridans streptococci found on culture of swabs. Some dental sepsis present. Tonsillectomy performed. Six months later kidneys showed normal renal function, but there were still some albumin and a few hyaline and hyalogranular casts in the urine.

This is another case in which the tonsillar infection was of long standing, the kidneys becoming progressively damaged; the response to tonsillectomy was thus not so marked as in cases of more recent origin, treated by the removal of septic foci.

Case 13.—Semi-chronic parenchymatous nephritis. Married woman, aged 34 years. Induction of labour in January, 1930, because of albuminuria and œdema. Admitted to St. Mary's Hospital on June 2nd, 1930, suffering from slight œdema of face and legs. Albumin 0·4 per cent., blood pressure 145/98. Blood-urea 48 mg. per 100 c.cm. Maximum urea concentration 2·5 per cent. Minimum concentration 2·1 per cent. Volhard's water test showed marked retention, only 267 c.cm. out of 850 c.cm. taken by mouth being excreted in four hours. On Feb. 27th, 1931, she still had œdema of her legs and 0·35 per cent. of albumin in her urine. As her condition was not improving, her tonsils, which were found to be infected, were enucleated, and the antra cleared. When seen six months later she had a trace of albumin in the urine, and some œdema of her legs, but she was back at work.

Case 14.—Semi-chronic nephritis. Woman, aged 41 years. History of dental trouble and bleeding from the gums. In November, 1929, a six and a half months' pregnancy was terminated in Queen Charlotte's Hospital because she became "unconscious." Admitted to St. Mary's Hospital in December, 1930, for headache, dyspnœa, anæmia, general weakness, and some œdema of the legs. Is very deaf. Blood pressure 210/110; heavy cloud of albumin in urine. Maximum urea concentration 3·4 per cent. and minimum 1·7 per cent. Volhard's water test showed some inefficiency of the kidneys. She only passed 640 c.cm. out of the 850 c.cm. taken in six hours. Blood-urea, 41 mg. per 100 c.cm. Hæmolytic and viridans streptococci found in the throat and the hæmolytic variety in the fæces. Both tonsils and antra were infected. Tonsillectomy performed on Feb. 25th, 1931, and antra cleared up.

Oct. 7th, 1931. Her general condition since the operation remains much the same. She still has marked secondary anæmia. The urine contains a faint trace of albumin and one hyalo-granular cast was found. Maximum urea concentration 2·7 per cent. and minimum 0·4 per cent. She passed 564 c.cm. out of 850 c.cm. of water taken by mouth in two hours, which is about the normal amount for the time, and compares favourably with the findings in December, 1930. This patient, in common with many other cases of nephritis following pregnancy, had a definite infection of tonsils and antra; moreover, the response to operative treatment, because of long-continued damage to the kidneys, was not nearly so marked as in early cases, particularly in non-pregnancy ones.

It is probable that focal sepsis plays a definite part in the ætiology of the nephritis associated with pregnancy, even if it is not the actual cause of the condition; thus it should be sought for in the early stages of pregnancy with albuminuria, and, what is more important, eradicated if found. Although in antenatal clinics it is, no doubt, customary to have a look at the throat and teeth, this in itself is not sufficient; the examination should be carefully carried out by ear, nose, and throat, dental, and radiological specialists. It is comparatively easy to miss small infected tonsils, sepsis at the apices of the teeth, and antral infection. One case I sent to the ear, nose, and throat department for examination showed only a slight dimness of the right antrum on transillumination; this was confirmed on radiography, but it was not considered that there was sufficient evidence of infection to justify operation. On opening the antrum, however, it was found to be full of pus, the explanation being that the antrum discharged itself from time to time and that it was empty at the time of the X ray examination.

Vaccine Treatment in Nephritis

Vaccines should be tried only in cases in which surgical interference is impossible—e.g., in streptococcal excess in the intestinal canal. The streptococci of pathological significance are usually the hæmolytic and viridans varieties. Streptococci may also be found on culturing catheter specimens of the patient's urine. In most cases, however, the urine proves to be sterile. The presence of an organism, moreover, is usually the result of contamination. A negative finding does not imply the absence of nephritis, because the damage to the kidney is due, as a rule, to a toxin and not to the direct action of the organism.

The dosage of vaccines is important: one should begin with 0·1 c.cm. of a vaccine containing 5,000,000 organisms in each c.cm., and work up, at five- to seven-day intervals, to 1 c.cm. of a preparation containing 500,000,000 organisms in each c.cm. A local reaction at the site of injection, an increase of albumin or blood in the urine, or a general reaction with malaise and headache, are indications for cutting down the dosage.

Vaccines have no effect in clearing up septic foci in the tonsils, sinuses, or sockets of the teeth; in these conditions an operation is essential. Moreover, the results obtained from the injection of vaccines prepared from stool cultures tend to vary so greatly that it is impossible to venture an opinion as to their eal value. If a patient is treated with vaccines and the condition fails to respond, a further search should be made for dental, tonsillar, and sinus infection, and should include radiographic examination if these have not been made previously. As a last resource, the stools may be re-examined, because the disappearance of one type of streptococcus may result in the growth of another strain which has been kept down by the original organism ; a fresh vaccine containing this strain would then be required for a further series of injections.

The comparative failure of vaccine therapy is one of the great tragedies of medicine, but we have not as yet, I think, touched the fringe of this type of treatment.

Comments

1. It is an accepted fact that tonsillitis is a cause of acute nephritis. Paterson and Wyllie [8] have shown that 85 per cent. of cases of acute hæmorrhagic nephritis in children are due to tonsillitis or associated conditions, such as cervical adenitis and otitis media ; the causal organism is usually the streptococcus, although the staphylococcus and pneumococcus are sometimes found. Acute nephritis, moreover, is very common after scarlet fever and diphtheria, conditions in which infection of the throat is one of the most prominent symptoms.

2. I have tried to show in this article that in the vast majority of cases of nephritis of various types it is possible to demonstrate well-marked infection of the tonsils, antra, teeth, &c. ; this is particularly the case in subacute nephritis with much œdema, and it is in these patients too that early removal of focal sepsis appears to give the best results.

3. If the kidneys are badly damaged by the long-continued excretion of a more or less virulent toxin, a surgical operation, by removing the source of the latter, may tend to slow down the progress of the disease ; but the best results are obtained when the tonsillar or other infection has been searched for and eradicated at a very early stage.

4. In the very chronic cases of nephritis with high blood pressure—200 mm. of mercury or more—even if infection is discovered, it is questionable whether the benefit obtained is sufficient to justify the risk of surgical interference. One of the above patients with a blood pressure of 210/110 mm. of Hg took a general anæsthetic well during tonsillectomy, but two months later, when having some teeth extracted, collapsed during gas.

5. It is suggested that specialist examination of the tonsils and antra be undertaken at the earliest moment in all cases of pregnancy in which albumin in the urine or other signs of nephritis appear, also in post-scarlatina, diphtheria, and other conditions in which residual tonsillar or associated infections tend to occur. Moreover, if focal sepsis is discovered it should be removed at once, as a precaution against the possibility of subacute or chronic nephritis later.

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THE MENOPAUSAL AGE AND MAMMARY CARCINOMA

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MUCH experimental work has been done in an attempt to define the relation of normal mammary growth and functional activity to the influence of ovarian and other growth factors. In the human subject, histological and clinical evidence show this interdependence at all stages of the mammary life-cycle, from the initial formation of the organ before birth, through the growth activity of puberty, pregnancy, and lactation, and at the period when atrophy of glandular structure is associated with the subsidence of the reproductive function. But when abnormal growth or tumour formation, and especially carcinoma of the breast, is in question, curiously little attempt has apparently been made to correlate such pathological activity in the mamma with disordered function of the growth stimuli which produce and maintain its normal condition. Most experimental work has been an effort to establish some connexion between tumour growth and more or less extraneous factors, such as inflammatory and irritative processes, stasis of secretory or other products, and like conditions.

It is, of course, obvious that much difficulty lies in the way of estimating such correlation in the human subject, but it seems possible that more progress might be made in elucidating and defining the factors which lead to the development of tumours in the breast, if these growths were regarded, not merely as surgical emergencies needing appropriate local treatment, but as manifestations of a wider derangement in the organism. If this were so, the pathologist and the statistician might be provided with data which would assist in histological interpretation, and which would go towards building up simple but important physiological generalisations on the inter-relations of the commencement, continuance, and cessation of activity of glandular organs. It would be helpful in the attainment of this object to have on record the marriage state, the number of children, if any, whether they were nursed, any further details of the lactation history, and the length of time which had elapsed since the last lactation. These latter questions have an obvious bearing on the possibility of retention of secretion in the glandular tissue, and the part this may play in the production of benign or malignant growths. Even more helpful would be information with regard to gynæcological function and, if the patient is older, the age of the menopause and any disturbance associated with it. The absence of information with regard to these last questions is almost general, and is the more surprising when it is remembered that all statistics of the age range of malignant development in the breast associate the emergence of mammary carcinoma, in the great majority of cases, with the menopausal or post-menopausal period.

AN INVESTIGATION OF AGE-INCIDENCE.

During a study of normal mammary histology, in association with the late Prof. Lorrain Smith, the idea of trying to connect more definitely the menopausal period with pathological growth in the mamma suggested an investigation into a number of histories which might provide some more exact information regarding the age range of the menopause in women. The collection of these statistical data had in view the determination of (1) the frequency distribution of the menopausal ages, and (2) the correspondence of this with the ages at which mammary cancer makes its appearance. In the latter case, the age-period is known to be more or less coincident with that of the menopause. There is, however, in the first place, insufficient knowledge of what the age at the menopause may be, and in the second place, it would be of some interest to show how far cancer in an organ such as the mamma, with its close hormonic connexion with ovarian and uterine activity, runs parallel in regard to age-incidence with that of the menopause.

The investigation was carried out on the surgical side of a women's hospital, where gynæcological data are taken as a routine part of the patient's history. The age of the menopause was therefore available in almost all cases where the period had been completed. The conditions for which patients had entered hospital included the usual wide range of surgical lesions, with a preponderance of gynæcological disorders. A series of 300 histories of patients past the menopause was studied, but 56 cases of intermenstrual hæmorrhage and other uterine disturbances which made the time of the menopause uncertain have been excluded. This left 244 cases, a small number of the total available, but one considered sufficient for a preliminary statistical survey and for comparison with a series of malignant breast cases, which numbered 343.

The figures for the two series are as follows: those belonging to the first series of 244 cases, in which the year of the menopause was under examination, are entered in the second column (Mnp.); those of the series of 343 malignant breast cases, giving age at time of operation, are entered in the third column (Mlg.).

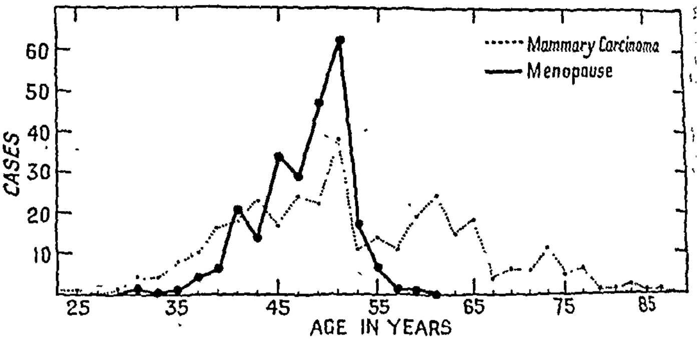
Age.	Mnp.	Mlg.	Age.	Mnp.	Mlg.	Age.	Mnp.	Mlg.	Age.	Mnp.	Mlg.
23	0	1	39	4	10	55	1	7	71	0	0
24	0	0	40	14	12	56	1	6	72	0	6
25	0	1	41	7	6	57	0	5	73	0	5
26	0	0	42	7	9	58	0	12	74	0	4
27	0	0	43	7	14	59	1	7	75	0	1
28	0	1	44	14	7	60	0	14	76	0	5
29	0	0	45	20	10	61	0	10	77	0	1
30	0	2	46	13	12	62	0	7	78	0	1
31	1	2	47	16	12	63	0	8	79	0	0
32	0	3	48	24	19	64	0	9	80	0	1
33	0	1	49	23	13	65	0	9	81	0	0
34	0	0	50	52	30	66	0	3	82	0	2
35	1	8	51	10	8	67	0	1	83	0	0
36	2	5	52	10	7	68	0	4	84	0	1
37	2	5	53	7	4	69	0	2	85	0	0
38	2	6	54	5	7	70	0	6	86	0	1

The graphs of these figures are here illustrated, the numbers being grouped in two-year periods; thus the age-period extending from the completion of the thirtieth year of age to the completion of the thirty-second year is called on the graph 31 years. However grouped—in two-year, three-year, or five-year periods—the maximum incidence, both of the completed menopause and of the emergence of malignancy in the breast, lies in the five-year period, 48 to 52 years inclusive, with the peaks close together and on the same ordinate. The wide range of the menopause—29 years—is to be noted.

WIDE RANGE OF THE MENOPAUSE.

Several facts emerge from a study of the histories which provided the menopausal figures.

1. The usual period given for the completion of the menopause is between 40 and 50 years, with the maximum incidence between 45 and 48 years, but a wider range of variation in the age—from 30 to 59 years—is brought out by these figures. This result suggests that, in the absence of detailed data, the conclusions to be drawn regarding the histological appearances in the breast, the relation of cancer to involution at the menopause and so on, should be strictly qualified. The actual age of a patient may be less accurate than the age of the menopause, as an index of mammary atrophy. It is frequently stated in the literature, for example, that cystic disease of the breast occurs, in the majority of cases, *at too early an age to be associated with meno*pausal disturbance, but in the light of these figures such a statement has little validity unless menopausal data are also available.



The age-incidence of mammary carcinoma and the menopause.

2. The earliest age in the series at which the menopause was completed is 31 years. This patient, aged 56, came to hospital with intestinal carcinoma. *She had two children, the younger aged 25.* Since the birth of this child, when the patient was aged 31, she had never menstruated again. The birth was normal, and as she was otherwise quite well, she thought it unnecessary to seek advice. I have come across a number of references in the literature to the occurrence of the menopause before 35 years; Bloodgood[1] mentions a case, also at 31 years, in a nullipara, and associates such early atrophy with absence of pregnancy and lactation. The patient with the menopause at 59 years, the latest in the series under review, came into hospital for a prolapse of 12 years' duration. She had had ten children, and a miscarriage when she was 54 years old. An extraordinary case of prolongation of menstrual life reported recently by Andrew,[2] may be mentioned here. One of his patients, an old lady of 80 years of age, "first started to menstruate at the age of 1 She is married, and has had *eleven living* children, three stillborn, and four miscarriages. Her last was born when she was 46 years of age. Since then she has been absolutely regular . . . up to about five years ago." The periods were still quite regular (at the age of 80) *though diminishing in duration.*

3. The menstrual irregularity which precedes the completion of the menopause in the series *extends* from a few months to five years; *from one to three* years is not unusual. This is not in accord with the observation frequently met with in the literature that the climacteric in women, in contrast with the

imilar period in men, supervenes more or less rapidly. Valker,[3] for example, states that "in the case of roman, the ovaries pass from full activity to complete cessation of function in the course of a few nonths; in man, the process of genital extinction nay be spread over several years." The duration f this menstrual irregularity associated with subsidence of ovarian activity suggests that the process f involution in the breast may also, in certain ases, be uneven, variable, and protracted. This possible instability or "physiological unrest"[4] may have a bearing on mammary pathology, especially when it is remembered that the majority of cases of carcinoma emerge at the same age-period as that of the completed menopause. It would be interesting to have a frequency distribution of the duration of the menopause.

4. It is often stated that the menopause is earlier f lactation hypertrophy has not taken place; various generalisations are also made regarding the association of pathological growth in the breast with such conditions as the absence of pregnancy, the absence of lactation or its curtailment, and the rapidity of successive pregnancies; but it appears from the histories in this small series of 244 cases that such statements need more investigation before they can be accepted. So far, no obvious relation is revealed by these cases between (*a*) the number of pregnancies and the age of the menopause; (*b*) the absence of pregnancy and an early menopause; (*c*) the age of puberty and the age of the menopause; and (*d*) the interval between the last pregnancy and the age of the menopause. The establishment or denial of any correlation between these data needs the examination of a larger series of cases, and these, it is hoped, will be available for a later investigation.

CONCLUSION.

In this short study I have endeavoured to make a simple survey of the duration of the menopause, and have set up in parallel the frequency distributions of the menopause and the age-incidence of cancer of the breast. I may be permitted to conclude from my figures that—

(1) The age-distribution of the menopause, as shown in this series of cases, has a longer range and frequency than is commonly allowed.

(2) The figures representing the age-distributions of the menopause and the incidence of cancer of the breast are not inconsistent with the hypothesis, suggested also by other considerations, that a correlation exists.

My acknowledgments are due to the British Empire Cancer Campaign, with whose assistance I am engaged on a general investigation on mammary carcinoma, and to the honorary surgical staff of the Bruntsfield Hospital for Women and Children, Edinburgh, for access to their case records.

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2. Andrew, P. W. L.: Brit. Med. Jour., 1930, ii., 1030.
3. Walker, Kenneth: Ibid., 1932, i., 50.
4. Riddoch, G.: Ibid., 1930, ii., 987.

ENLARGEMENT OF GOSPORT WAR MEMORIAL HOSPITAL.—Mr. A. M. Williams, county director of the British Red Cross Society, recently opened considerable extensions of this hospital. They include a new wing, bringing the number of beds up to 42, with two sun wards, a new outpatients' department, a greatly improved and enlarged X ray department, and additional domestic accommodation. The night nurses' bedrooms have been made soundproof.

Clinical and Laboratory Notes

PULSATING EXOPHTHALMOS DUE TO SPHENOIDAL SINUS MUCOCELE

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ABOUT two years ago a man, aged 32, was referred to me for treatment.

History.—In 1922 he had noticed bulging of his left eye, which got gradually worse, but no doctor was consulted until 1925. His medical adviser then sent him to hospital, where—according to his statement—he was radiographed and a Wassermann test was made, both with negative results. An orbital tumour was diagnosed and he was asked to attend hospital so that he could be kept under observation, but he failed to do so.

There was no impairment of vision until 1928, when the sight began to grow dim and the eye to protrude considerably. A dull pain was experienced over the left frontal region. Suddenly one day there was a profuse discharge of about an egg-cupful of thick, brownish fluid from the left nostril; this lasted about half an hour, and was followed by a certain amount of relief; the eyeball receded considerably, and the sight improved. The next day he saw his oculist, who recommended another X ray photograph. This suggested disease of the left ethmoidal region, but unfortunately only an antero-posterior picture was taken. Under an anæsthetic a large quantity of fluid, like that which came from the nose, was aspirated by plunging a long needle through the inner conjunctival fornix. This fluid was examined microscopically but revealed nothing of note. After this treatment the eye condition remained stationary for a short time, and then gradually the aforementioned symptoms and proptosis began to get worse. The patient became alarmed about the sight of his eye. It was in 1930, just 12 months later, that he was referred to me.

Condition on Examination in January, 1930.—The left eye was pushed forwards, downwards, and outwards, and was very tense; there was no narrowing of the palpebral fissure, or any signs of swelling beneath the supra-orbital margin. The eye symptoms complained of were practically nil, with the exception of slight dimness of vision. There was no diplopia. Examination of the nose revealed nothing very much except that the mucous membrane over the outer wall of the left nostril (the affected side) seemed rather atrophi

I made a diagnosis of mucocele of a posterior orbito-ethmoidal cell or sphenoidal sinus for the following reasons: (1) long history; (2) absence of any inflammatory symptoms or signs; (3) the very great extent to which the eyeball was pushed forwards, together with the absence of any swelling in the supra-orbital region; (4) the slight dimness of vision, which could be caused by pressure on or stretching of the optic nerve; (5) the previous discharge of thick, brown, viscid fluid from the left nostril.

I decided to explore the ethmoidal and sphenoidal regions endonasally.

First Operation.—Without the slightest resistance the punch forceps went through the anterior and posterior ethmoidal cells, and it was only when the sphenoidal sinus was reached that a small quantity of thick, brown fluid, such as one sees in a mucocele, was found. I did not find anything like the amount I expected, and I did not feel satisfied with the result of the operation. There was a slight discharge for 10 or 12 days, and for a time there was some slight amelioration of the symptoms.

In May, 1931, I saw the patient again and he was very much worse. The eye was proptosed to an alarming extent and he could not quite close the lids. The dimness of vision was slightly more pronounced, and a dull pain in the occipital region was felt, especially on moving the head quickly. Distinct pulsation was felt in the eyeball, though it was not visible. The patient felt rather nervy, and the condition was evidently beginning to tell on his general health. An external operation was the only thing, and I decided on this at once.

Second Operation.—I made an incision starting from the inner part of the supra-orbital margin, down the side of the nose, and continued into the vestibule. With a bone-cutting forceps I then removed part of the nasal bone and frontal process of the superior maxilla opening the floor of the frontal sinus. I then proceeded to remove the inner wall of the orbital cavity from before backwards, having first separated the mucous membrane of the outer wall of the nose from the bone so as to lessen the hæmorrhage. I had to be very careful of the structures in the orbital cavity, and I was particularly frightened of damaging the optic nerve which I knew must be stretched and attenuated.

Nothing abnormal was encountered until I came on what I believed might be the optic nerve, and then, without any warning, a column of dark reddish-brown glairy fluid shot right out of the back of the orbital cavity. The first impression one got was that an aneurysm had been opened. The pulsation was very marked, and the fluid filled the entire operation area. After several minutes of diligent swabbing the roof of the left sphenoidal cavity and posterior part of the orbit were found to have been absorbed and a large portion of the dura exposed. The contents of the mucocele had spread into the posterior part of the orbital cavity, and evidently passed backwards beneath the dura at the base of the brain. This extensive exposure of the dura, together with the fact that the large vessels and cavernous sinus were in close proximity to the mucocele, accounted for the abnormal pulsation. Working in such a dangerous area, I did not explore or do more than was absolutely necessary as soon as I was sure that I had ensured adequate drainage. I packed the entire cavity with iodoform gauze, bringing the end through the anterior nares, and stitched up the external incision with the exception of the inner angle of the eye, where I put a thin rubber tube to drain that area, the other end protruding at the nostril.

Course of Case after Operation.—After 24 hours I removed the gauze packing and washed out the nose twice daily with alkaline lotion. I put the patient on urotropine grs. 10 thrice daily for the first ten days. On the third day the temperature began to rise, and with slight remissions remained about 103° F. for seven days. The discharge was scanty; there was a fair amount of headache and dimness of vision became rather more pronounced. As was to be expected, there was considerable œdema of the left eyelid, which was entirely closed for several days. About the sixth day a large clot was removed by syringing from the operation area, through the nose; the discharge became more abundant, containing a large proportion of pus. The temperature began to drop, headache disappeared, and orbital swelling and œdema diminished. The vision, though still hazy, improved considerably. I removed the tube from the frontal region as soon as the discharge ceased, which was about the ninth day, and the external incision healed rapidly.

I saw the patient at intervals of a month afterwards, the proptosis getting less each time. The last time I saw him he was feeling quite well, back at his work, and the eye was almost normal in position. His sight had practically recovered, though he was wearing glasses on the advice of his oculist.

COMMENT.

The diagnosis of sphenoidal sinus mucocele presents some difficulty since, owing to the deep position and varied anatomical structure and size of the sinus cavity, the disease may lie latent for several years. Should any part of the bony walls be destroyed, the implication of important nerves and vascular structures makes the diagnosis still harder. The extensive absorption of bone in the case described above, and the considerable area of dura exposed, together with the close proximity to the large vessels and sinuses, gave the feeling of pulsation to the proptosed eye. A pulsating exophthalmos is usually due to an aneurysm but in this case the character of the pulsation, the long history of the case, and the absence of any marked symptoms such as headache, pain, and ocular symptoms, coupled with the previous discharge of fluid from the nose and the radiographic findings, made the diagnosis of mucocele certain.

The dimness of vision was due to the fact that the mucocele had invaded the posterior part of the orbital cavity, and not only caused pressure on the optic nerve, but stretched it considerably by pushing the eyeball forward. It was surprising that the sight was not irreparably damaged, considering the extreme proptosis and the large amount of fluid present, with the extensive absorption of bone.

While mucoceles are common enough in the ethmoidal cells, they are very rarely found in the sphenoidal sinus. StClair Thomson, in his text-book on diseases of the nose and throat, says that one case was reported by Hajek, of Vienna, while other standard text-books on the subject do not even mention the condition.

I wish to thank Dr. Margaret Dobson and Mr. Graydon Hume, both of whom first saw the case and then referred the patient to me for treatment. I am also indebted to Mr. Buckland Jones, who kindly assisted me at the second operation.

ELECTROCARDIOGRAMS OF TWO PATIENTS DURING ATTACKS OF ANGINA PECTORIS

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THESE two cases confirm the findings of Parkinson and Bedford in their paper in THE LANCET of Jan. 3rd, 1931.

CASE 1.—A man, aged 72, gave a history of chest pain on exertion for some seven years. An interesting feature was that frequently he could walk quite well in the morning but could not take exercise in the afternoon without producing the pain. There was a long history of indigestion, he had a mouthful of septic teeth, and was himself insistent that his pain had no relation to his heart but was dyspeptic in origin. He was seen on Nov. 6th, 1931, in consultation with Dr. Greville B. Tait, of Handcross.

On my arrival the patient had an attack of pain radiating down both arms, and the first electrocardiogram was taken while this pain was at its height. There is contralateral RS–T deviation in leads I. and III., downward distortion in lead I. and upward in lead III. In addition, rhythm is interrupted by premature beats of auricular origin. The patient was given trinitrin, and the second electrocardiogram was taken half an hour later when he was free from pain. In it the RS–T deviation has practically disappeared, rhythm is uninterrupted, and the complexes are of lower voltage than in the electrocardiogram taken during the anginal attack. A curious feature is that what little distortion is evident in lead II. in the first electrocardiogram (Fig. 1) resembles that of lead I., while in the second (Fig. 2) the distortion follows that of lead III. This patient had clinical evidence of organic disease in raised blood pressure, enlargement of the heart to the left, and albuminuria, but as he himself was bstinate in refusing to ccept the cardiac ex- lanation of this pain it as fortunate that we ere able to obtain con- rmation of the clinical iagnosis by the oppor- nity of electrocardio- raphing him during an ctual attack.

FIG. 1.

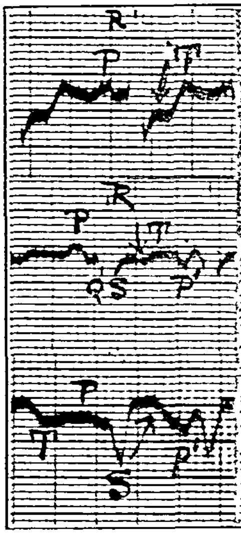


FIG. 2.

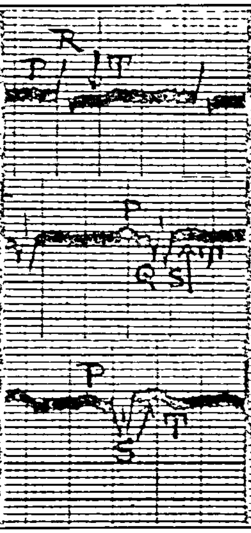


FIG. 3.

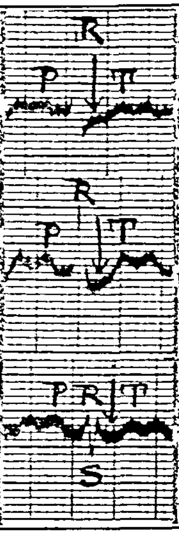


FIG. 4.

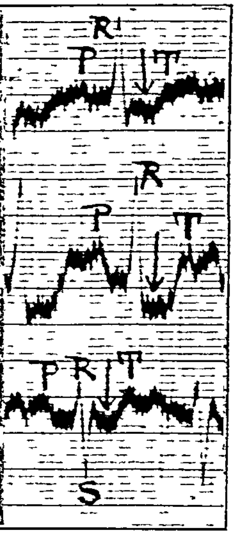


FIG. 1 (Case 1).—Taken during anginal attack. R–T depression in lead I. S–T elevation in lead III. Rate 96. Rhythm interrupted by ectopic beats of auricular origin.

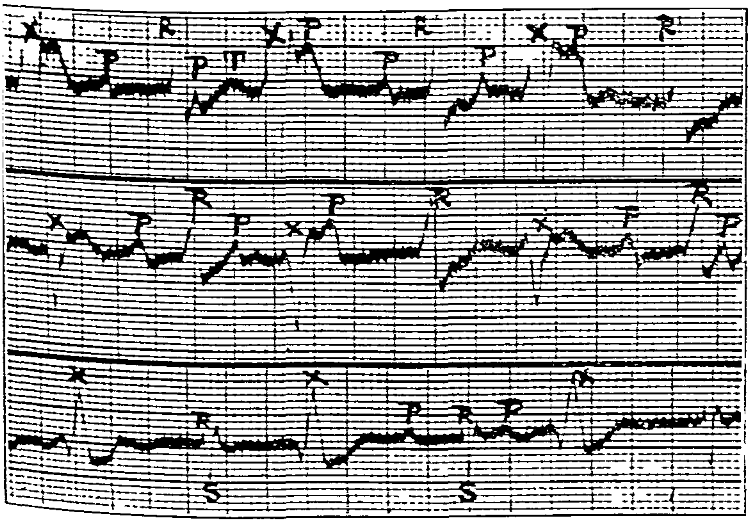
FIG. 2 (Case 1).—Taken half an hour after anginal attack. RS–T distortion much less, rhythm uninterrupted, voltage of RS waves lowered.

FIG. 3 (Case 2).—Taken during anginal attack. R–T depression in all leads. Rhythm regular. Rate 120.

FIG. 4 (Case 2).—Taken during anginal attack with very severe pain. R–T depression deeper than on previous occasion and RS waves of higher voltage.

CASE 2 was a man of 7 who was sent to ie on Dec. 8th. 1931, y Dr. H. A. Whyte- enables, of Pulborough. wo years previously e had had a "nervous reakdown." and since hat time had suffered reatly from flatulence. ll his teeth had been xtracted, and he had ad various treatments. ll without benefit, the act being that he as a confirmed wind- swallower. Thirty ears earlier he had een told that he had eart trouble, and in larch, 1918, he had een put in Category C3, and told that he had murmur. There was a history of chest pain for ver a year, the pain being referred over a ide area and, when severe, radiating down the rms, but although in the main it was provoked y exertion, such as walking uphill and kick-starting is motor-bicycle, he had been able to carry on with is employment as an insurance agent. When I saw im his eructations were loud enough to be heard

FIG. 5.



CASE 2.—Taken in terminal stage of illness. × × × = Right ventricular ectopic beats.

in the street. He had a short apical systolic murmur, not conducted outwards, and the apex was in the fifth space, only 4 inches from the midsternal line. His blood pressure was 166/90. Over the aortic area there was a very loud and harsh systolic murmur conducted upwards into the neck and heard over a wide area but not accompanied by thrill. While I was electrocardiographing him he informed me that he had his pain at the time.

The electrocardiogram (Fig. 3) shows RS-T distortion with the deflection downwards in all three leads. Later, during my clinical examination, pain returned, and on this occasion he stated that it was much worse, worse indeed than he had ever known it. At the same time he was voluble, his colour did not change, and there was nothing about him to denote suffering. I took the opportunity of obtaining a second electrocardiogram during this attack. The curve is of the same type but with extreme exaggeration of the distortion (Fig. 4).

I saw this patient again on March 23rd. His progress had been steadily downwards, and on March 10th he had a severe attack of pain lasting 36 hours with collapse, vomiting, fall in blood pressure, and subsequent pyrexia. When seen he was orthopnœic, and that morning had had hæmoptysis for the first time, evidently from an infarction of the left lower lobe. The cardiac rhythm was interrupted by premature beats, and an electrocardiogram (Fig. 5) taken at the time showed every alternate beat to originate in an ectopic focus in the right ventricle and complete dissociation of auricles and ventricles. He died on March 27th.

Neither of these patients had been taking digitalis or any drug of the digitalis group.

MEDICAL SOCIETIES

EDINBURGH OBSTETRICAL SOCIETY

A MEETING of this society was held on May 11th, with Dr. JAMES YOUNG, the President, in the chair.

Salpingitis

The PRESIDENT and Dr. T. N. MACGREGOR read a paper on the Palliative Treatment of Salpingitis based upon an analysis of 55 consecutive hospital cases. They stated that it was now generally recognised that immediate operation in cases of salpingitis exhibiting acute symptoms was attended by grave risk to life. At the British Congress of Obstetrics and Gynæcology at Manchester in 1927 Hendry reported 24 operations on acute and subacute cases (gonorrhœal and septic) with nine deaths, and Beckwith Whitehouse stated he had lost three consecutive cases when he removed the tubes for acute pyosalpinx. The last occasion on which Dr. Young and Dr. MacGregor had removed an acute tube was in 1924; the patient died two days after operation. Since then all their cases had been treated palliatively with no hospital mortality. In the present series of 55 cases 51 were admitted with acute or subacute symptoms. In three cases the abdomen was opened to eliminate the possibility of acute appendicitis or tubal pregnancy and as acute inflammation of the tubes was found the abdomen was closed without interference with the inflamed area. In four other cases a pelvic abscess was evacuated by posterior colpotomy. Otherwise the treatment was palliative, consisting of rest in bed, hot fomentations to the abdomen, and morphia. In 10 out of the 51 cases readmission for recrudescence of the symptoms was necessary, and in two of these extirpation of chronically diseased organs was later carried out. Of those cases treated palliatively which were followed up 90 per cent. were found to have made a complete or adequate spontaneous clinical recovery. These findings confirmed the observations of Curtis and Hendry who in cases of acute salpingitis treated entirely on palliative lines obtained a clinical recovery in 90 and 91 per cent. respectively.

Dr. Young and Dr. MacGregor pointed out that expectant treatment, besides safeguarding life, as a rule gave the best chance of functional recovery, since operation during the acute phase usually revealed such extensive involvement of the pelvis that eradication was possible only by drastic excision of the organs. By expectancy the organs were conserved and on these, if necessary, plastic surgery could at a later date exercise its ingenuity if pregnancy was desired. In this connexion it was important to find that functional recovery occurred spontaneously in a number of cases. In five, or 12·8 per cent., of their series there was a pregnancy after discharge from hospital.

Dr. FARQUHAR MURRAY (Newcastle-upon-Tyne) read a paper in which he discussed the insufflation test and considered that it should be made in every case of sterility, especially if there was an antecedent history of pelvic inflammation. He considered it was important to insufflate while performing a salpingostomy, not only to prove patency but by dilating the tube to facilitate the incision. Proof of patency of one tube made a laparotomy unnecessary. The test was reliable but not infallible. The occasional fallacies were shown by X ray examination after injecting lipiodol. There was a definite risk of
peritoneal shock and air embolism, but little, if an
of lighting up a septic process in the tubes or pe
toneum. Insufflation gave no clue to the site
blockage in cases with sealed tubes. Both t
insufflation test and the injection with lipiodol shou
be performed under anæsthesia.

Radiography after injection of lipiodol show
exactly the site of blockage in cases with sealed tub
If this was at the abdominal end of the tube the c
was ideal for salpingostomy, but if it was at
interstitial or isthmic portions of the tube tl
operation was inadvisable. Injections of lipio
were of diagnostic, prognostic, and therapeutic va
in cases of chronic pelvic pain. This applied especia
to those cases with no palpable evidence of tu
mischief. The injection often made the pain worse
a period and in a certain number the X ray exami
tion showed that the injection did not enter the tu
or having entered failed to reach the peritoneal cavi
or a second photograph taken 24 hours later show
that lipiodol was held up in a loculus in the tu
In a normal case there was no definition of shadov
merely a diffuse pelvic blurring at the second exami
tion. The prognostic value consisted in pr
that there was a tubal disorder in cases which w
being treated symptomatically for chronic pel
pain and in deciding which of those cases should
should not be operated upon. If proof was obtai
by X ray examination that there was drain
both into the uterus and into the peritoneal cav
then operation should be postponed; evidence
defective drainage on the other hand would has
operative treatment.

In one of Dr. Murray's cases the lipiodol inject
caused an acute attack of inflammation with
formation, but the operative findings showed
existing chronic infection. He considered that
cases requiring active disinfection under anæsth
for cervicitis and vaginitis should be injected v
lipiodol and radiographed; the pain associated v
a cervicitis was due in his opinion to a mild tu
infection, and an injection with lipiodol had a di
nostic and therapeutic value in such cases.

ROYAL ACADEMY OF MEDICINE I IRELAND

SECTION OF SURGERY

AT a recent meeting of this section with Mr.
ATKINSON STONEY, the President, in the ch
Mr. F. J. MORRIN reported the case of a wom
aged 33, who had a painless tumour in the left hy
chondrium, with all the clinical characteristics of
enlarged spleen. The blood picture excluded sple
anæmia, and a pyelogram showed a normal re
pelvis.

Hepatosplenography

Thorotrast was employed to demonstrate ra
graphically the liver and spleen. This substan
said Mr. Morrin, was a 25 per cent. colloidal solut
of thorium dioxide, stable and non-toxic, and
intravenous injection it was deposited in the retic
endothelial cells of the body. Because the liver
spleen were specially rich in these cells, the drug
deposited in sufficient concentration to render th
organs opaque.[1] Concentration of the salt
slow and its excretion was even slower. Radiogra—

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[1] See THE LANCET, 1931, ., 144.

aken 48 hours after the injection of the full dose red the liver and spleen clearly outlined, and ther radiogram taken ten days after administering drug showed clear delineation of these organs.

was recommended that a small dose of 10 c.cm. iven in the morning and if there was no reaction sea or vomiting) a further dose of 15 c.cm. ht be given on the same evening. The necessary was from 50 to 75 c.cm., given intravenously ng three to five days. The method should not be loyed in cases of advanced hepatic cirrhosis, ite fibrosis, advanced parenchymatous involve- t of the liver and spleen, advanced jaundice, or l deficiency. It might nevertheless be useful in differential diagnosis of obscure abdominal ours.

epatosplenography in this case showed a normal liver spleen. A bismuth enema was arrested at a point just l to the splenic flexure. Operation revealed a large rculoma of the transverse colon involving the splenic ıre. A resection of the tumour was performed, and the ation completed by a lateral anastomosis of the bowel. post-operative course was uneventful.

he President thought the case very interesting, ause although tuberculoma of the cæcum was fairly mon, the diagnosis between it and carcinoma sometimes extremely difficult, and tuberculoma ther parts of the intestine was very rare. In this hepatosplenography made it clear that one not dealing with an abnormal spleen. But l more experience had been gained, he personally ld be slightly diffident about using it in all cases.

r. G. C. Dockeray said that it was supposed t antibodies were formed by the reticulo-endothelial em. Having regard to this fact, he wondered ther it might not be unwise to block the reticulo- othelial system with thorium in patients who were y ill.

r. H. Bouchier-Hayes asked if thorium had been d in cases of subphrenic abscess, and if anything known about the work which had been done with rium in cases of glandular enlargement in malig- t disease.

Ir. Morrin, in reply, said he thought that in ients who were very ill the method should not be d. He thought it probably would help in the gnosis of subphrenic abscess, but he had never d it in such a case. He had no experience of use in malignant disease.

SECTION OF PATHOLOGY

A meeting of this section was held on May 6th, h Dr. J. T. Wigham, the President, in the chair.

Ganglioneuroma

Dr. W. Boxwell showed a specimen of ganglio- uroma.

The patient, a man aged 30, was admitted to hospital have a pleural effusion tapped. He stated that before mission four or five people had tried to tap it without cess. He was very much wasted, had a history of cough many years, and had recently had bronchitis with fuse expectoration. The condition was thought to be thisical. While in hospital he had a bad cough, much pectoration, and sweating. The only place where any eath sounds could be heard was right at the base of his ng. Having regard to this fact, it was thought probable at there was not a pleural effusion. Three days after mission the patient died. Evidence of chronic bronchitis d bronchiectasis was found post mortem, with patches of eumonia, and it was thought that the patient had really ed of sepsis. The tumour, which weighed just over three unds, was adherent to a tiny little piece of lung. There s practically no lung on the right side, as it had apparently en absorbed while the tumour was growing.

Ganglioneuromata, said Dr. Boxwell, were very rare, for only 51 had been described. Most of them were quite small, about the size of a hazel-nut. They were supposed to develop from the sympathetic ganglia or from the medullary part of the suprarenal glands.

Lymphatic Leukæmia

Dr. A. R. Parsons read notes on the case of a girl, aged 4, who was admitted to hospital with a greatly swollen and hard abdomen.

The mother said that for six months the child had been losing her colour and her appetite; she did not want to play and slept all the afternoon. Before admission she ate practically nothing, but drank a good deal. The spleen was greatly enlarged, and the liver extended down to the umbilicus. The glands in the neck however were not swollen. A blood examination showed 5 per cent. of polymorphonuclear cells, and 95 per cent. of lymphocytes. She became gradually worse and died about a week after admission. A post-mortem examination was carried out.

Dr. Wigham in demonstrating the specimens said that the liver and spleen were greatly enlarged. The kidneys had no appearance at all of kidney structure, but were just white and red masses, the red masses being hæmorrhagic areas. Both liver and kidneys showed extremely well-marked lymphoid metaplasia.

Sarcoma of the Pancreas

Dr. C. J. Shortall in a paper on sarcoma of the pancreas said that neoplasms of the gland were in general rare, and most of them were carcinoma. Sarcoma was very rare and Marxer, writing in 1925, said that up to that time round-celled sarcoma had not been described.

A man, aged 31, was admitted to St. Vincent's Hospital on Feb. 23rd, 1932, suffering from severe epigastric and loin pains. These had begun in the previous December. Vomiting was infrequent. For a time the case was treated as one of gastric ulcer. Jaundice appeared shortly before admission and gradually became more intense. Slight epigastric distension and extreme tenderness in this region with ecchymosis were noted. Blood count revealed a mild secondary anæmia and the serum gave an immediate direct positive van den Bergh reaction. Cholecystography showed a liver shadow which was denser than normal but failure of concentration of the substance in the gall-bladder. The stools were clay-coloured and contained excess of undigested fat. He died on April 8th.

Post mortem the abdomen was found to contain bile-stained fluid. To the naked eye the whole pancreas seemed to be involved in a growth which at its head compressed and occluded the common bile-duct. The liver and the other abdominal organs were deeply bile-stained and the gall-bladder was distended. Microscopically the pancreatic growth was shown to be a round-celled sarcoma with small isolated patches of normal gland substance containing acini, ducts, and islets of Langerhans. A single secondary deposit was found in the liver, another in the wall of the gall-bladder, and a number in the right lung.

Dr. Parsons said that this patient had been under his care for a month in another hospital. At that time he complained of pain in the epigastrium which he said he had had for a month. It was worse immediately after meals. He was greatly wasted, and suffered from constant retching. The presence of an ulcer in the stomach was suspected. Radiography showed nothing suggestive of any intrinsic lesion.

Dr. J. McGrath said that Ewing practically denied the existence of sarcoma of the pancreas, so the present case must be a very uncommon one. The lung condition was very interesting, and it was remarkable that it was only the right lung that was involved, the left lung being almost normal.

Mr. C. O'Leary exhibited a sacro-coccygeal tumour from a fœtus, and Dr. Parsons read notes on a case of cardiac thrombus, a case of pleurisy, and a case combining cancer of the stomach, aneurysm of the abdominal aorta, and hydronephrosis.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in Pathology

By GEOFFREY HADFIELD, M.D., F.R.C.P. Lond., Professor of Pathology in the University of London; Pathologist to the Royal Free Hospital; and LAWRENCE P. GARROD, M.A., M.B., B.Ch. Camb., M.R.C.P. Lond., Bacteriologist and Lecturer in Bacteriology, late Demonstrator of Pathology, St. Bartholomew's Hospital. London: J. and A. Churchill. 1932. Pp. 392. 15*s.*

Prof. Hadfield and Dr. Garrod have succeeded in what must have been a most difficult task—"to present recently acquired knowledge of disease processes in a form useful to the student of medicine." They have accomplished it partly by the method of special pathology, that is, by taking in order the systems of the body and supplying critical accounts of new work; and partly by separate chapters devoted to matters not conveniently classified by this method.

The first seven chapters deal concisely and lucidly with modern views on such difficult subjects to compress into small compass as the reticulo-endothelial system, tissue culture, different aspects of cancer research, and certain deficiency diseases. These chapters could hardly be better; and in those dealing with the various systems we find but few and unimportant matters to criticise. In the chapter on the cardiovascular system the different forms of endocarditis and diseases of the arteries are selected for discussion. The renal changes in essential hypertension are here described and it is helpful to have these changes explained as a part of the disease as a whole. It would have been a convenience to the student had the renal changes in acute and subacute bacterial endocarditis also been included in the appropriate place. In the chapter on the respiratory system an account is given of new work on the pathogenesis of lobar pneumonia, followed by a note on psittacosis pneumonia, and sections dealing with cancer of the lung and the pneumoconioses. Diseases of the digestive system are briefly noticed, with an account of Matthew Stewart's recent work on peptic ulcers, and there follows a somewhat vague commentary on hepatic necrosis and fibrosis which omits any reference to hæmochromatosis and to the recent controversy over the ætiological significance of copper in this disease. Brief comment is made on the unsatisfactory nature of our knowledge of the pancreas, and the recent discovery of the association of tumours of islet tissue with hyperinsulinism is recorded. The subject of Bright's disease receives longer and more detailed treatment both from the point of view of functional derangement and of the morbid anatomy and histology of this condition. The recent classification of Dorothy Russell has been extensively drawn upon in the description of types although the nomenclature used by her is not adopted. In "chronic toxic nephritis with reticular fibrosis type III." (p. 307) the statement that the arteries in the boundary zone are "very prominent and pointing" is misleading. This is a type found in children and young adults and is occasionally associated with renal dwarfism; it is a notable and curious fact that cardiovascular hypertrophy is usually absent or slight in this type and the renal arteries consequently show little change. In the section devoted to the central nervous system a description of the neuroglia is followed by an account of Bailey and Cushing's classification of the gliomas. This is admirably concise, though it is not free from minor inaccuracies. For instance, it is by no means generally agreed that the microglia is an element of the reticulo-endothelial system: a rival view that it is a variety of the neuroglia proper still flourishes in central Europe. The assumption which is here perpetuated that the Cohnheim-Ribbert theory on which the classification of Bailey and Cushing is based has been generally abandoned is hardly justified, for this theory is still held by many authorities. Incidentally Bailey and Cushing have never claimed that this theory would account for all the known kinds of glioma. The statement that hæmangioblastomas are confined to the cerebellum takes no account of the cerebral examples described respectively by Walshe and Barnard in this country and by Roebat in Holland. The forms of encephalitis due to virus diseases form a later section and are admirably summarised. Diseases of the ductless glands are represented by a discussion of the different kinds of goitre and of various disturbances of the parathyroid and suprarenal bodies. Special attention is directed to the alterations in calcium metabolism and the bone diseases that accompany abnormal parathyroid activity; in the next edition recent work on adenomas of the pituitary gland will doubtless claim inclusion.

In supplying references at the ends of sections, the authors have selected those only that appear to them to contribute materially to knowledge. It is open t question whether a considerable amplification of thes lists would not be advantageous, for some references ar omitted which are of first importance to the advance student. A notable example is Turnbull's classica paper on diseases of the blood-vessels. The book i illustrated by a large number of microphotograph which maintain a high standard of excellence.

The Acute Abdomen

By C. H. FAGGE, M.S., F.R.C.S., Surgeon t Guy's Hospital. London: John Bale, Sons an Danielsson, Ltd. 1932. Pp. 92. 2*s.* 6*d.*

Mr. Fagge has succeeded in giving an admirabl outline of surgical abdominal emergencies within th limits imposed upon him by the editor of this serie of pocket monographs. It is a book for an hour o two's leisure at the fireside, and one could guess tha it was similarly written in a comfortable armchai from the author's wealth of experience in this aspec of surgery. He follows the usual practice in mos emergencies. We note with interest, however, tha he is a strong advocate of operative treatment of bleeding gastric or duodenal ulcer at the earlies possible moment, using the hæmoglobin percentag as a guide to the risk incurred. He says he has neve seen gastrostaxis in a man; this must be an unusu experience if this term is held to include oozin from very small mucosal ulcers, which are reveale only by the closest search even on the post-morte table. Another interesting opinion is that expresse on the treatment of appendicitis; Mr. Fagge recommends delay in operation when the patient is seen after the third day. On page 13 the statement is made that an appendix abscess (apparently the ordinary variety) can be opened extraperitoneally; presumably Mr. Fagge means without passing through the unaffected part of the general peritoneal cavity.

The house surgeons to whom the book is dedicated, and many other individuals, will derive both profit and pleasure from reading this manual.

Surgical Errors and Safeguards

By **MAX THOREK**, M.D., Surgeon-in-Chief, American Hospital, Chicago. London: T. B. Lippincott and Co. 1932. Pp. 696. 45*s*.

Dr. Thorek, impressed by "the disastrous effect of major surgical procedures, attempted lightly by young, or even inexperienced older surgeons" of which, he says, he still has almost daily evidence, has been moved to write this book to point out the lurking dangers of even simple operations, the mistakes which may be committed, and the precautionary measures. Each chapter discusses errors and safeguards in respect to operations in general, or to those in particular regions of the body. There is no doubt that the writer of this book has struck an original note and has performed a distinct service in calling attention to the harm which the inexperienced may cause and the errors into which they may fall. Dr. Thorek has collected much information which is not easy of access. It is also extremely interesting for any operator to read of the trials and difficulties of other surgeons and to see how they have attacked the problem of extrication and with what success they have emerged.

There is much sound advice and wise counsel in the book, but it does not quite accomplish the author's aim. It falls short because, in so many instances, the way to remedy mistakes is omitted. Thus the damage which may be done to the urethra by the unskilled use of bougies is stressed, but neither the proper method of passing them, nor even the different varieties of bougie adapted to different conditions are described. This is a sad gap. Again, the spinal-accessory nerve in the posterior triangle of the neck and the supply to the depressor labii inferioris in the submaxillary triangle are certainly liable to injury during the excision of tuberculous glands it is true, but directions could be given to a surgeon on how to avoid these accidents. Again, when removing thyroglossal cysts we are told (in bold type) to dissect, not the cyst alone, but also the prolongation into it of the remnants of the thyroglossal duct; at the same time we are warned to make sure that there is a thyroid gland present in its normal position. The subject is left thus, no hint being given that the first object cannot be attained unless a small portion of the hyoid bone be removed, or any guidance on the proper procedure—i.e., whether a dissection of the neck is recommended to determine the existence of the normal thyroid. These are just the things the novice wants to know; he has probably already heard about the possibility of the accidents themselves.

Other examples of failure in constructive teaching could be found, but the book contains much valuable teaching, especially in those branches of surgery in which the author has obviously had extensive experience, as in goitre surgery. His notes on the preparation and care of toxic cases are simple and instructive. Apparently Dr. Thorek has had to perform tracheotomy for urgent dyspnœa due to a goitre in which delivery of the gland failed to bring relief; this must be a very rare emergency. Writing of high tracheotomy in another part of the book, he says that three or four rings of the trachea should be divided. This would surely mean an unnecessarily large wound which would certainly involve the isthmus of the thyroid gland. Dr. Thorek lays it down as a rule that tonsillectomy should never be performed before the coagulation time of the blood has been found to be normal.

The book, as a whole, is entertaining and stimulating; it is original in conception, and very well produced and illustrated.

The Physical Basis of Personality

By C. R. **STOCKARD**. London: George Allen and Unwin. Pp. 320. With 74 figures. 12*s*. 6*d*.

THIS book is of interest to medical readers chiefly by reason of the author's description of his own researches into the mechanism of the production of double and other monsters and into the nature and inheritance of gigantism, dwarfism, and achondroplasia in different breeds of dogs. Partial achondroplasia is common among dogs either in their faces or their legs, or both, and his investigations into its inheritance and behaviour in crosses are important in any consideration of the human disease. The work is in progress so that it is perhaps hardly fair to complain that the descriptions are defective in anatomical and histological detail, and that few facts are cited to support the implication that the ductless glands are involved.

Mental Deficiency Practice

By F. C. **SHRUBSALL**, M.A., M.D., F.R.C.P., D.P.H., Senior Medical Officer, London County Council; and A. C. **WILLIAMS**, M.R.C.S., L.R.C.P., D.P.H., Divisional Medical Officer, London County Council. London: University of London Press. 1932. Pp. 352. 12*s*. 6*d*.

THIS book, the work of experienced examiners of defectives, is designed to set out "the steps required to effect a satisfactory disposal of any given case." Methods of diagnosis are described and the administrative procedure for the purposes of both the Education Act and the Mental Deficiency Acts is defined. The book also includes short sections on causation, pathology, and psychology which, if amplified, would entitle it to rank as a text-book. In their present form, however, their omission would have been no loss. The absence of diagrams reduces the value of the chapter on pathology; and the description of the propagation on mendelian lines of a simple unit recessive serves little purpose here, since geneticists agree that mental defect is not a unit factor. The practical notes on points relating to individual mental tests are mostly excellent though occasionally somewhat elementary. Several good performance tests are included which will be found especially useful in examining older defectives, for whom the ordinary scale of the Binet type has but limited value. The authors' belief in the use of the word-association tests for high-grade cases may not be shared by all examiners. No reference is made to the significance of children's drawings. Of especial value are the indications given for the testing of blind and deaf subjects.

The arrangement of the book tends at times to a certain amount of repetition which might have been avoided. The detailed description given of the method of filling up the official examination form of the Board of Education, while undoubtedly useful, has involved the repetition of matter already given in the chapters on general description and clinical types. Moral defect is treated with unusual brevity. The authors' view is that the main characteristic of this condition is an "all-round lack of feeling tone" and while they hint at the possible association therewith of some lack of forethought and wisdom, they do not appear to stress this element so much as do some authorities. Enough is said to make it clear that a diagnosis of moral defect is not to be made lightly, and that it is not easy to fit actual cases into a definition which, as it stands, corresponds to no psychological entity and requires to be recast.

The interesting table given comparing mental ages with chronological ages of children in London special schools suggests the question why more than 10 per cent. of these children should have a mental age within less than two years of their chronological age. It would seem as if educational attainments count for more in their selection than mental ratios. This has a bearing on the larger problem raised by the Wood Report, of the desirability of abolishing certification for educational purposes.

The section dealing with administrative procedure is excellent, and the list of specimen forms given in the Appendix unusually complete.

The Donnan Equilibria

Their Application to Chemical, Physiological, and Technical Processes. By T. R. BOLAM, M.Sc. Bristol, D.Sc. Edin., Lecturer in Chemistry in the University of Edinburgh. London: G. Bell and Sons, Ltd. 1932. Pp. 154. 9*s.*

THE Donnan equilibrium theory has always attracted the attention of physiologists and biochemists interested in the physical side of their work. The classical experiments of Loeb on the application of the Donnan membrane equilibrium theory to explain the behaviour of proteins gave another fillip to the study of biological processes from this point of view. It followed naturally that others should develop these mathematical theories in relation to various processes such as secretion and diffusion in the animal body. The principle has been applied to the study of the equilibrium of blood chiefly by American workers—notably L. J. Henderson, Van Slyke, and their colleagues. Its application to the osmotic relations of the intra-ocular fluids has been attempted by Duke Elder and others, and urinary secretion has not escaped attention. This book gives an able summary of these various activities. The work is a little topheavy with physical chemistry, and the biological applications are dismissed in a relatively short space. To those who are not familiar with the literature this work will be of much value since a useful general bibliography is given at the end.

Filterable Virus Diseases in Man

By JOSEPH FINE, M.D., B.Sc., D.P.H. Glasg., D.T.M. Liverp., Assistant to the Professor of Public Health, Edinburgh University. Edinburgh: E. and S. Livingstone. 1932. Pp. 144. 6*s.*

DR. Fine has provided a really useful outline of filtrable virus diseases and we anticipate that it will find many readers amongst medical students. His task has been by no means easy, for an elementary text-book on a rapidly growing subject is far more difficult to compile than a comprehensive treatise. The various virus diseases of man, grouped according to their mode of transmission and tissue affinities, are clearly described in successive chapters. There are two appendices, in the first of which information on human virus diseases is tabulated, whilst the second resumes our knowledge of all viruses, including the bacteriophage. The scheme of classification used can only be accepted as a provisional one; the author himself realises this and has merely adopted it to facilitate the presentation of his subject. Certain contradictory statements have found their way into the work. On p. 6, for instance, one of the characters of the yellow fever group is said to be that "the serum of convalescents is capable of protecting against an injection of infective blood," and in the next paragraph that "neither immune bodies nor viricidal properties have been demonstrated in the serum of convalescents in any members of the group." Again in Appendix I we read that in zoster and varicella complement-fixing bodies are absent from the serum of convalescents; yet on p. 63 the work of Netter and Urbain demonstrating cross complement fixation with the serum of zoster and varicella convalescents is mentioned. It is not correct to say that perivascular demyelination is a constant feature of the cerebral type of *poliomyelitis* (p. 91). But to labour these points would give a false impression; for on the whole the book is accurate and clear. Dr. Fine has made it easy for those who have not the time to seek out original papers on filtrable virus diseases or to consult large works to follow the progress made in recent times, and many will be grateful for the opportunity.

Leçons cliniques sur les maladies du sang et des organes hématopoïetiques

By CH. ACHARD, Professeur de Clinique Médicale à la Faculté de Médecine de Paris; Membre de l'Académie de Médecine et de l'Académie des Sciences. Paris: Masson et Cie. Fr. 34.

HÆMATOLOGY has proved one of the most fruitful fields of medical research during the past eight years; but this clinical note on the diseases of the blood and the hæmopoietic organs, by Prof. Achard, in which he has incorporated much recent work from different sources, should serve to check undue optimism. In only three of the conditions described does he offer any hope of recovery or of rational treatment. He does not, however, discuss the part played by deficient nutrition in the ætiology of certain anæmias, nor is mention made of idiopathic microcytic anæmia or acholuric jaundice. His conclusions might, therefore, be considered unnecessarily pessimistic. Each disease discussed is illustrated by extremely detailed case-histories together with the results of repeated blood examinations; these are sometimes difficult to follow since they are not arranged in tabular form. Unlike most observers he believes that hæmophilia may occur in women. He does not mention recent work from Chicago on the possible significance of the female sex hormone in the ætiology of the condition; this work, if confirmed, may have a bearing on treatment. A few observations by G. Fontes and I. Thivolle, published in *Le Sang* (1930, iv., 658), on the therapeutic value of the injection of tytophane and histidine, which has as yet received no corroboration, form the basis for the somewhat sweeping conclusion that lack of these two amino-acids, due to deficient gastric digestion of protein, is responsible for the failure of hæmopoiesis characteristic of pernicious anæmia. The chapters dealing with leukæmias and the confusing conditions of aleukæmic leukæmia and agranulocytosis contain many interesting clinical observations. Prof. Achard wisely insists on the danger of over-emphasis of minute morphological differences found in the white cells of the peripheral blood. Such differences depend in many instances upon a personal factor.

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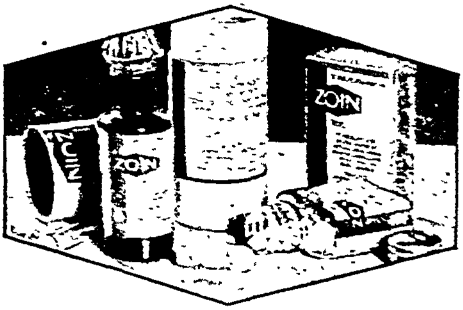

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LONDON: SATURDAY, JUNE 11, 1932.

THE PERSISTENT OFFENDER

THE report[1] of the Departmental Committee on Persistent Offenders naturally does not confine itself to the custodial aspect which the events and consequences of the Dartmoor mutiny recently emphasised. It looks to the reform of the offender before he becomes persistent. In 1930, the latest year for which criminal statistics are available, more than half the 3900 sentences of imprisonment were imposed on persons who had already been in prison. The figures confirm the conclusion that the probability of a relapse into crime increases with the number of previous sentences. The inference is that our present methods do not check the criminal propensities of the persistent offender but progressively deteriorate him. What then are we to do about him? First of all, what manner of man is he? Prison authorities group him in three categories—first, the offender of relatively strong mind and character (often young and therefore more susceptible to the reformative process) who has deliberately chosen crime; secondly, the weaker spirits who drift into crime through inability to face the difficulties of social life; and thirdly, the pathological cases of abnormal or subnormal mentality amenable possibly to medical or psychiatric treatment. To this third class and the committee's observations thereon we will presently return. Meanwhile, to run briefly through the committee's reasoned recommendations, it is proposed to abolish penal servitude and the cumbrous and already obsolescent procedure (under Part II. of the Prevention of Crime Act, 1908) for giving additional sentences to habitual criminals. The committee advocates two new forms of punishment, detention (for a period from two to four years) and prolonged detention (for a period from five to ten years). The change is partly one of vocabulary. Prolonged detention is proposed for a person convicted of a crime who has at least three previous convictions of crime and whose criminal habits and mode of life are such that lengthened confinement is expedient for protection of the public; this is not very different from the existing law. But "crime," it is proposed, shall include not only all felonies (as already in Part II. of the 1908 Act) but also certain sexual offences and all attempts to commit "crime." The latter categories are at present excluded because they are misdemeanours and not felonies—an anomalous distinction which is ripe for removal. Both classes of the new detention will aim at remedial training; there are to be carefully graded establishments suitable for all types of offender, a new impetus in adult education and industrial training, and full trial of labour camps, "minimum security structures," the parole system, and the possibility of applying female influence by the appointment of matrons in penal institutions. If penal servitude is to go, we may hope that various grim enactments as to transportation will at last be removed from the statute book where they at present linger because, by a typical Parliamentary makeshift, they were applied for the purposes of penal servitude.

Chapter XI. of the report is of much interest to medical readers, for here we find discussion of those pathological cases which are possibly amenable to psychiatry. Here the committee attempts to answer the question how far the persistent offender can be treated as a mental patient. Reviewing the statutory facilities for dealing with the habitual drunkard and the mentally deficient, the committee passes on to those types of minor mental abnormality for which no special statutory provision exists. There are the weak-minded who leave school without adequate after-care arrangements. There are the delinquents who may become persistent offenders through emotional and temperamental instability; some of these cases appear to right themselves when physiological balance is regained after adolescence. Then there are the offenders who repeatedly commit the same kind of crime, acts of indecency and other sex offences, magpie thefts, and certain minor peculations, arson and some other acts of wilful damage against property. Punitive and reformatory measures of the ordinary sort seem here ineffective; yet some mental abnormality must be the cause of this conduct which is a menace or a nuisance to society. After examining the evidence of experts in psychotherapy, the committee guardedly proposes to try what psychological medicine can do. It recommends that a medical psychologist be attached to one or more penal establishments to carry out treatment in selected cases. He should be assisted by voluntary women workers who will visit the offender's home and obtain information about his history and circumstances. Already for some time lads under 21 years of age who are received in the Boys' Prison at Wormwood Scrubs, sentenced to detention in a Borstal Institution, or remanded from the Metropolitan and adjacent areas for medical report, have been psychologically examined by the medical officers of the prison. The committee considers that extended action along these lines will show whether the psychological treatment of delinquency is of sufficient value to justify statutory recognition. At the same time the committee is careful to affirm its belief that crime is not a disease, and that it is impracticable and generally unnecessary to examine the mental condition of all adults who appear in court upon a criminal charge. The affirmation of this belief is a reminder that the Home Office is not yet ready either to abandon the legal principles of criminal responsibility in relation to abnormality of mind or to take full advantage of the help that medical science can give. The committee's recommendation, nevertheless, is a notable step which may lead legal principles far afield.

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[1] H.M. Stationery Office. Cmd. 4090. 1s. 6d.

TRANSURETHRAL PROSTATECTOMY

THE two papers on prostatectomy at the front of this issue are concerned with a variety of the operation which has had little notice in this country. Indeed, apart from a paper written by Mr. KENNETH WALKER[1] in 1925, we can recall no extensive review of the modern methods of transurethral resection; and it is to be hoped that our American contributors will succeed in arousing some of the interest in it which has evidently inspired their own experiments.

The national tradition in surgery is in favour of thoroughness, and an operation which removes only part of the prostate, and leaves behind tissue that may increase in size and cause recurrence of symptoms, is apt to appear incomplete and therefore unsatisfactory. For this or other reasons most urologists here are of opinion that cases suitable for this form of treatment are few and far between. In the light of the papers by Prof. CABOT and Dr. MCCARTHY can this attitude be justified? Whatever the answer, it is clear at any rate that the whole subject of the prostate and its treatment is full of difficulty. We do not know for certain whether what we remove in "prostatectomy" is in fact the prostate, or whether it is—as some pathologists have long maintained—an enlargement of the submucous glands of the posterior urethra. Our knowledge of its physiology and pathology is indeed so far from complete that guidance in treatment must be sought in clinical results rather than in any general principles. From the standpoint of the clinician the results of prostatectomy are excellent, but it certainly has to be admitted that they are obtained at no small price, for the operation still carries with it a high mortality. This mortality is not of course surprising, in view of the age of the patients and their liability to post-operative complications; but an operation with a death-rate that ranges from 8 per cent. to 20 per cent. can hardly be regarded as satisfactory, however great and however permanent the benefit to the survivors may be. The most careful consideration must therefore be given to any form of treatment that carries a lesser risk—even if the critic starts with a reasonable suspicion that the relief it gives cannot be so lasting or so complete as that which follows more radical intervention.

It is said that the transurethral operation is appropriate in only a small proportion of cases of prostatic obstruction; but CABOT and MCCARTHY agree that recent developments have greatly extended its scope. The latter goes so far as to say that "90 per cent. of prostatic enlargements, malignant or otherwise, may be regarded as so much plastic material to be removed seriatim by a loop charged with a new type of cutting current." This is a claim that may well prove excessive, but the more conservative estimate given by Prof. CABOT is high enough to dispose of the contention that transurethral therapy can rarely be used and is therefore of little importance. CABOT, who has long been known as an enthusiastic advocate of suprapubic prostatectomy, holds that 50 per cent of cases of obstruction are amenable to treatment by transurethral methods, and he anticipates that with improvement of technique something like 75 per cent. will eventually be brought within their range. Only the patient with a massive enlargement of the lateral lobes will have to face the greater peril of complete prostatectomy, and as W. F. BRASH points out[2] this type of prostate is becoming rarer. The patient of to-day seeks medical advice at an earlier stage of his trouble, for it is now more generally known that safety lies in timely treatment. Hence the proportion of cases which could be treated by transurethral prostatectomy is greater than it was formerly, quite apart from the progress that has been made in technique. How far the present hopes may be disappointed is necessarily uncertain, but even allowing for unexpected limitations it is hard to avoid the conclusion that the operation is one which has come to stay.

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ANIMAL ECOLOGY

As a natural reaction to the analytical method which has been so characteristic of biological progress in the last hundred years, we have heard a good deal in recent times of the necessity of studying the animal as a whole. Most workers whose aims and procedures are professedly scientific have found a good deal of difficulty in investigating live things without taking them to pieces; naturalists alone have been content to look at animals and plants as they are, to know about them and to be with them, and to those who are brought up in the confines of laboratories their attitude towards the organisms which interested them must have seemed as much that of a lover as of a student. We are now happily returning to the atmosphere of the eighteenth century, and are reviving a natural history which is as scientific as any other section of biology in the sense that it is orderly, systematised, and quantitative. The object of animal ecology is to discover how animals live and die, their breeding and multiplication, their food, their enemies, and the causes of their death—to find out, that is, for the blackbird, the mole, the stickleback, and the slug what the hygienist is anxious to know about man. It seems strange that in the 70 years which have passed since the publication of the "Origin of Species" so little has been done to ascertain the actual facts on which the whole theory of that book depends; that natural selection operates has been accepted, but of what it operates on and by what means, we are still largely in ignorance. It is the business of ecology to find out.

The inherent interest of the search is obvious, and its practical importance is now sufficiently plain. Man's control of his biological environment depends on his knowledge of how it lives and moves and has its being. Malaria, trypanosomiasis, plague, typhus are all in the main ecological problems. and our capacity to deal with them depends mostly on how much we know of the lives of mosquitoes, tsetse flies, fleas, and lice. The strange periodical fluctuations in the numbers of animal populations to which Mr. ELTON has paid particular attention are responsible on the one hand for the price of a fur coat and on the other for the wholesale ruin of a countryside by locusts. The student of infectious diseases wants to know what happens when the natural interaction between a parasite and its host is not interfered with by conscious sanitary measures; what exactly is the relation between the plague bacillus and the rat, or between trypanosomes and game in Africa? Are infections with bacteria, protozoa, and viruses important causes of death in natural populations of animals as they are among artificial populations of human beings? Real comparative pathology has hardly been born yet; that it will have abundant applications to human problems there can be no doubt.

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[1] Brit. Med. Jour., 1925, i., 201.

[2] Minnesota Med., April, 1932.

For these reasons we heartily welcome the appearance of the new *Journal of Animal Ecology*, though some may wish the promoters had seen fit to use the original European spelling of the key word. It is issued[1] by the British Ecological Society which has published the *Journal of Ecology* (mostly botanical) since 1913, and is edited by Mr. CHARLES ELTON and Mr. A. D. MIDDLETON, of the department of comparative anatomy at Oxford. The first number contains a quantitative account of the rookeries in the Wirral, a census of the bird population of an Oxfordshire farm, an analysis of the fluctuations of midges infesting wheat, the prey of a carnivorous fly, and an extremely interesting description of how each nest of wood ants in a coppice has its own territory and feeding grounds. From abroad we have papers on bird life in Brazil and fruit bats in Australia. The journal should appeal to readers of very varied interests, and it will play a most useful part in the development of real biology; we hope it will quickly receive the support which it needs to put it on a sound foundation.

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THE NUTRITIVE VALUE OF MARGARINE

MARGARINE is one of the foods which is not at present officially defined in this country and it can legally be made from any kind of fat. The chief restrictions regarding its composition are that it must not contain more than 16 per cent. of water nor more than 10 per cent. of butter fat. The modern manufacturer employs fats from both animal and vegetable sources and is able to produce from these a substitute for butter which may compare favourably with butter itself in regard to appearance, consistence, and taste. The Institute of Hygiene recently appointed a committee to consider the conditions which margarine should fulfil in order that it might be certified as a good food. It was agreed[2] that as sources of energy margarine and butter were equally valuable, so far as could be determined. The chief difference between the two foods is in their vitamin content. Butter is a valuable source of vitamin A and contains moderate amounts of vitamin D, whereas most brands of margarine are deficient in both of these vitamins. It is now possible to add concentrated preparations of these vitamins in a comparatively stable form to margarine during the process of manufacture, and vitaminised margarines are already being sold which contain at least as much vitamin A and vitamin D as good butter. The vitamin content of such margarines is likely to be more constant than that of butter, which is known to vary considerably with the conditions under which the cows from which the butter is derived are kept. It is the usual practice in this country to colour margarines, and for this purpose either carotene or aniline dyes are used. Carotene is now recognised as the precursor of vitamin A, and its presence in margarine enhances the vitamin A activity of the product. In view of these facts the committee have submitted certain recommendations with regard to the properties of a good margarine. The product must be made from pure ingredients and must contain vitamins A and D in amounts equivalent to those found in samples of the best summer butter. It should not contain more than 10 per cent. of water and must be free from added preservatives other than salt. It should be coloured with carotene and not with aniline dye. It was further recommended that it should contain butter fat up to the present legally permitted limit of 10 per cent. of the total fat; a limit which is fixed by law at this low level to enable the analyst to distinguish readily between margarine and adulterated butter. Such a margarine might conceivably be inferior to natural butter in nutritive value owing to the absence of food factors other than vitamins A and D from the synthetic product, but its food value would be definitely superior to that of ordinary vegetable margarines.

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THE BIRTHDAY HONOURS

ON page 1275 will be found the names of medical men and women who received honours on the King's Birthday. These do not, of course, represent the full recognition bestowed upon medical endeavour, for the complete Honours List contains the names of many who have worked in alliance with medicine though they do not belong to the profession. Among the new barons Mr. David Davies has given substantial help especially to the King Edward VII. Welsh National Memorial Association, of which he is now president. Mr. James Macfarlane, who receives a knighthood, is chairman of the Glasgow Royal Infirmary, and by gifts and otherwise has done much to make possible its extension at Canniesburn. Notable among the Commanders of the Order of the British Empire is Miss Margaret Anderson, lady superintendent of the East End Maternity Hospital; and elsewhere we see with pleasure the names of others who have distinguished themselves in the service of hospitals and laboratories in nursing and in public health administration.

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[1] Cambridge University Press. 30s. per annum.

[2] Jour. Inst. Hygiene, June, 1932, p. 12.

ANNOTATIONS

LAWSON TAIT

Mr. Christopher Martin has done well to reprint the substance of two lectures which he delivered, one to the Midland Medical Society, the other to a group of American visitors. In these he gave an unbiased account of the life and work of Lawson Tait[1] and by personal reminiscence assists us to appreciate the kind of man that he was, going far to remove the wrong impressions created by Tait's foibles and failings. Lawson Tait was the pioneer of much in abdominal surgery, and started almost as a child on the road to surgical success. Born in 1845, he won a scholarship at the University of Edinburgh in 1860, and while still a student became a pupil of Sir James Young Simpson, in whose house he lived. To Simpson he bore such a remarkable resemblance that the belief that he was his patron's illegitimate son was widely held, though the rumour has been indignantly contradicted by members of Simpson's family. Despite his precocious and promising start, and his early association with Simpson, Tait did not proceed to a medical degree, but contented himself with the Edinburgh diplomas which he obtained in 1866. In the following year he was appointed resident surgeon at the Clayton Hospital, Wakefield, and in 1868 he performed his first ovariotomy with success. He stayed at Wakefield for three years and then started in general practice, but with the intent to make operative surgery his career, although he was at that time attached to no hospital and held no academic position. Real genius backed by enthusiasm and some aptitude for self-advertisement brought him practice, and by 1880 his name as an abdominal surgeon was widely familiar to all England. Mr. Martin gives a calendar of his achievements which makes astonishing reading, while the professional position that he acquired and the appointments which fell to him are remarkable, when it is recalled that from 1880 onwards Tait lost no opportunity of opposing Listerian surgery. But a summary of his own technique in abdominal surgery shows that, while he was wrong in his attacks on Lister, his extreme cleanliness was undoubtedly a forecast of modern aseptic methods. His first move was to join in the foundation of a special hospital, as he was debarred by the absence of honours degrees or diplomas from obtaining a post on the staff of a teaching institution. He sat down while in general practice to read for the F.R.C.S. Eng., and promptly secured the diploma. He then took a leading part in founding the Birmingham Medical Institute, and in 1881 read at an International Medical Congress a paper embodying five entirely new surgical procedures of the first importance. He was now appointed professor of gynæcology in the medical faculty of Queen's College, Birmingham, out of which to some extent the University of Birmingham evolved, and finally he was elected president of the Gynæcological Society and of the Medical Defence Union, which he had largely helped to reconstitute. Everything about Tait's life was dramatic, and it is a dramatic fact that a libel action of exactly the sort where the Medical Defence Union should have been able to help him started Tait's downfall, which was as rapid as his rise. The action had to be compromised owing to Tait's own conduct, and the fact damaged him greatly in the eyes of the public. His practice rapidly declined, he resigned his numerous important offices, and he died in comparative poverty at the age of 54. An enigmatic figure, but Mr. Martin brings evidence forward that proves his services to scientific surgery to have been literally wonderful.

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[1] Lawson Tait. By Christopher Martin, M.B. Edin., F.R.C.S. Eng. Reprinted from "Birmingham Medical Review," June, 1931. Pp. 32. 2s.

SEROUS PLEURISY DURING THE SPECIFIC FEVERS IN CHILDHOOD

A TYPE of pleurisy associated with a very thin fluid effusion and presenting physical signs which can easily be overlooked, has long been recognised at the Wilhelmina Hospital in Vienna, and during the last year has been more closely studied. Dr. Hermann Zischinsky[1] reports that within this period 40 cases have been seen, of which 25 were associated with scarlet fever, nine with diphtheria, one with measles, and five with a double infection by scarlet fever and diphtheria. Cases have been recognised in association with whooping-cough, and Zischinsky is careful to point out that most of the patients coming to his department—the infectious fevers section of the hospital—have scarlet fever, whereas only a small number come with whooping-cough, so that he is not in a position to say which of these infections is most likely to have pleurisy as a complication. The pleurisy begins almost without symptoms save a few days' rise in temperature. Occasionally the child complained of pain in the side of the chest or, more commonly, in the abdomen. There was no dyspnœa, and cough, if any, was very slight. As a rule nothing was found on examination beyond slight impairment of the percussion note at the base of one lung, with recovery of fluid on exploratory puncture over this area. The signs were far commoner at the left base than at the right (34 left and six right in the 40 cases under review). The dullness usually only covered a few fingers' breadth but occasionally reached as high as the angle of the scapula. Auscultatory signs were usually absent, or at the most consisted of slightly diminished breath sounds over the affected area. In 30 out of the 40 cases exploratory puncture revealed fluid; usually this was quite clear or very faintly clouded and only a few drops were obtained. Examination proved it to be sterile in most cases, although once diplococci and once staphylococci were discovered. In about half the cases, a few leucocytes were found in the fluid, but as a rule no cells were seen. The duration of the pleurisy was difficult to determine with accuracy, because there were so few physical signs, but the extreme limit appeared to be five weeks, and the shortest time for the disappearance of signs after a positive pleural puncture was five days. The tuberculin reaction was tested in each case and was positive in one-third—a proportion which Zischinsky regards as about normal for a sample of the child population at the appropriate ages. He therefore thinks that the pleurisy he is describing has nothing to do with tuberculosis. Radiological examination of some of the patients was not very helpful. Negative results were sometimes obtained although exploratory puncture had been positive, and the difficulties of radiographing infectious cases made it hard to investigate this method of diagnosis fully. It is insisted that a film should always be taken, for it may reveal an exudate which was missed on screen

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Jahrb. f. Kinderh., 1932, cxxxv., 213.

examination. The ages of the patients here described varied from 1¾ to 14 years, with the majority between 3 and 8. The day of onset in relation to the primary fever also showed great variation. For example, in the scarlet fever cases, although these were mostly seen in the first ten days of illness, the pleurisy came on at different times from the fourth to the thirty-sixth day. Zischinsky thinks that this type of pleurisy may be commoner than is usually believed, and not only among children with infectious fevers. There are other children in whom a few days of fever, associated with loss of appetite and energy, may really be due to this cause.

LIVINGSTONE HOSPITAL REPORT

AN unfortunate occurrence at the Livingstone Hospital, Dartford, when a young probationer nurse gave a patient belladonna in mistake for syrup of figs, was investigated at an inquest as noted at the time in THE LANCET (Feb. 20th, p. 418. The hospital trustees wisely invited a further inquiry, which was undertaken at their request by a committee constituted as follows: Mr. R. H. P. Orde, hon. sec. of the British Hospitals Association (chairman), associated with a medical superintendent of a hospital, a matron, a hospital secretary, a member of the hospital committee, and a barrister. The resultant report, which was unanimous, was subsequently published in the *Kent Messenger* together with a detailed statement by the president of the hospital, who was able to say that all the recommendations in the report had been promptly carried into effect. Although directed to the particular facts upon which the coroner had commented, the report of so well-equipped a committee of inquiry formulates standards of hospital management which may be found useful elsewhere. The report points out that the ultimate responsibility for efficient management of a hospital rests with the committee of management and that this responsibility is not entirely discharged by the appointment of officials, however competent or highly qualified they may be. The committee of management has a duty to provide (*a*) organisation whereby its officials may regularly present to it reports relating to their duties, and (*b*) certain safeguards of a general character whereby it can satisfy itself regarding the state of the institution for the good management of which it is responsible. Regulations, therefore, in accordance with the general practice of other similar hospitals should at once be drawn up and put into force. Hospital administration is impeded by the absence of rules defining the duties and responsibilities of the different members of the staff; this absence of rules results in lack of proper supervision and an inadequacy of essential written records and reports. Books, records, all documents, charts, and papers relative to the treatment of patients must be properly and clearly kept by the officials concerned. Essential details should be periodically abstracted from these sources and presented to the committee of management in such a fashion that it is possible for each member to obtain a grasp of the work of the institution for the management of which he shares responsibility. As regards poisonous drugs the committee of management should provide all necessary safeguards in respect of purchase, receipt, storage, dispensing, and administration. The committee should insist that in all cases there is written authority, signed by the medical officer prescribing, for all medicines and applications of any description; this authority should be definite and applicable only to the individual patient concerned. A fully qualified person should attend the hospital for a short period daily to issue all drugs. No persons other than qualified medical practitioners or chemists should have access to the dispensary. As regards nurses the committee of inquiry, sympathetically aware of the difficulties experienced by smaller hospitals in obtaining suitable probationer nurses, recommends the committee of management to essay the gradual improvement of the status of the hospital, either by increasing the number of beds, so that it may be recognised as a teaching centre, or by affiliation to an adjacent and convenient institution already serving as a training centre.

The perfect and elaborate system of hospital rules can no more eliminate the possibility of accident than the latest Merchant Shipping Acts and regulations can remove all risk of collision at sea. But it is obvious that the absence of clear rules is dangerous in hospital administration and that, if accidents unfortunately occur, such absence is bound to attract strong comment.

TRANSPLANTATION OF THE URETERS

TRANSPLANTATION of the ureters into the bowel is so rarely performed that reports on the operation are usually concerned with single cases. Hence the record therefore of five cases by F. H. Lahey [1] forms a valuable contribution. He has followed the technique introduced by Coffey, and speaks very highly of this operation, which he considers can now be done with very reasonable safety and with the assurance of a satisfactory result. Of the five patients three survived and have been followed for periods of 22 months, 9 months, and 5 weeks respectively. One died on the ninth day after operation, of lobar pneumonia, the condition of the operative site being entirely satisfactory; the fifth survived the ureteral transplantation but died a month later from an extensive operation for the removal of bladder and uterus. The indications for operation in these five cases were early carcinoma of the bladder, a contracted bladder consequent upon tuberculous cystitis, a vesico-vaginal fistula which was not cured by four plastic operations, inoperable carcinoma of the bladder, and a carcinoma involving the bladder and front wall of the uterus. As other indications for this operation, Lahey gives exstrophy of the bladder, intractable incontinence of urine, contracted bladder following Hunner's ulcer, and occasionally the relief of pain in extensive malignant disease of the bladder. Lahey transplants both ureters at one operation, but at a discussion on transplantation of the ureters for ectopia vesicæ at the Royal Academy of Medicine in Ireland,[2] most of the speakers advised transplantation of one ureter at a time. The rectum acts as a very efficient reservoir for the urine, and leakage does not take place, the bowel being emptied of urine about three to five times a day and perhaps once at night. A. A. Lendon and H. S. Newland [3] found similar satisfactory results in this respect in their cases which survived long periods of 21 and 16 years respectively. W. C. Stevenson, when opening the above-mentioned discussion, reported that his patient, a boy of 10 years, occasionally wetted the bed at night. As Lendon's patient developed symptoms of renal infection nine years after extraperitoneal implantation of the ureter into the rectum, it will be seen that it is essential to follow these cases over a long period. Lahey states that with the Coffey technique there is but little likelihood of ascending infection of the kidney.

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[1] New Eng. Jour. Med., April 28th, p. 875.
[2] Brit. Med. Jour., 1927, i., 328.
[3] Ibid., 1921, ii., 38.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: LEVERHULME RESEARCH SCHOLARSHIPS

As announced elsewhere, Lord Leverhulme has instituted two annual scholarships in medical research, the discretion of appointment and term of tenure being vested in the Royal College of Physicians of London. The scholarships are each of the annual value of £500, and the appointments will be for one year in the first instance, the renewals being at the discretion of the College. The scholars must be British subjects, and the work must have as its base some established institution, preferably in the United Kingdom, in which full facilities for the selected research are available. The scholars, who may be of either sex, must be not less than 25 years of age, and preferably possess a medical qualification. They must devote themselves to the investigation of some clinical problem of disease, as it occurs in man, and presents itself in any branch of medicine or surgery, while two scholars may combine in a joint research. It is to be noted, further, that scholars may be holding another appointment, or may be commencing private practice, provided that evidence is furnished to the College that the work of the research occupies the major part of their time. These latter conditions should be read in connexion with the age stipulation; it is clearly intended that the holders of these valuable prizes should have had clinical experience, and not have passed straight from the examination halls into the laboratories. The regulations state that each scholar shall send to the Registrar of the College an abstract of the work on which he has been engaged at the end of the first six months of each year, and a full report at the end of each completed year of tenure. Payment will be made in instalments, the first at the date of selection for the scholarship, and thereafter at intervals of six months. The scholars may publish the results of their researches, if they make known that the work has been done during appointment as a Leverhulme scholar.

Applications for scholarships should state: (1) name and age; (2) medical qualifications, degrees, &c., with dates; (3) past appointments, with dates; (4) present appointment, with salary (if any); (5) nature and scope of research proposed; (6) previous experience (if any) in research work; (7) list of papers published (if any), giving references; (8) place where proposed research is to be carried out; (9) names of two persons prepared to act as references. The applications should be addressed to the Registrar, Royal College of Physicians, Pall Mall East, S.W. 1, and marked "Leverhulme Scholarship." These should reach the College on or before July 4th.

MAX RUBNER

The death of Max Rubner at the age of 78 years, which was announced last week, deprives Germany and the world of one of their most distinguished men of science. More than 50 years ago, as a pupil of Voit, he began researches into the fundamental processes of metabolism which soon made his name widely known, and during his long and active life his contributions to the study of the energy exchanges of the body have been of supreme importance. He earned the title of professor at Marburg in 1885, and six years later was appointed to succeed Robert Koch as director of the Institute of Hygiene in Berlin. It was he who discovered that the basal metabolism of an individual was proportional to his surface area, and his figures for the calorific equivalents of protein, fat, and carbohydrate in the body are still widely used in calculating the energy values of diets. He demonstrated that the law of conservation of energy held good in the case of animal metabolism by perfecting the calorimetric methods of Pettenkofer and Voit. Some of the expressions which he coined have become household words in the science of nutrition, for example, "specific dynamic action" to indicate the increase of metabolism caused by the ingestion of protein, and the "wear and tear" quota of protein metabolism to describe the irreducible minimum of protein destruction in an animal supplied with abundant carbohydrate food. His work was by no means entirely academic. During the Great War he was called upon by the German Government to examine the possibility of increasing the available food-supply of the population. He carried out experiments on the digestibility of bran, and of chemically treated straw and sawdust, though without success; he remained convinced that the most economical preparation of wheat for human consumption was that in which 30 per cent. of the grain was milled away. During the last 20 years the qualitative aspects of nutrition have attracted far more attention than the quantitative aspects to which Rubner devoted his remarkable talents, and the practical results of much of his work may not be as apparent as those of modern pioneers. But Rubner's name will remain as that of a pathfinder in the science of nutrition.

PHYSIOLOGICAL EFFECTS OF ALUMINIUM

For 30 years and more there have been smouldering doubts about the use of aluminium cooking-pots. Lately, in some quarters, these doubts have quickened into a flame, and its heat has stimulated some of the appropriate authorities to review the evidence.[1] The latest reviewer is Dr. J. H. Burn, director of the pharmacological laboratories of the Pharmaceutical Society of Great Britain, who on June 1st addressed the Society of Public Analysts on the Physiological Effects of Aluminium. The first extensive investigation of these effects, he said, was made in 1886 by Siem, working under Prof. H. H. Meyer. Siem found that doses corresponding to grs. 30 to 40 of alumina for a man had no effect when administered by mouth to cats daily for four weeks. When the aluminium salt was injected under the skin, the fatal dose varied from 0·25 to 0·30 g. of alumina per kg. These results, indicating that aluminium has some toxicity when injected but is harmless by mouth, have in substance been confirmed by many subsequent workers. Siebert and Wells examined the pathological changes produced by injecting alum and aluminium chloride; they found that anæmia was manifested after nine or ten daily injections, a fall in the hæmoglobin percentage and in the red cell count being recorded. In the spleen, pigmentation, thrombosis, and fibrosis were observed. The experiments of McCollum and his colleagues, and those of Myers and Mull, show conclusively that the addition of aluminium salts to the diet of young rats has no ill-effect on growth, health, and reproduction, even when four successive generations are observed. Those of Myers and Morrison, and of Underhill and Peterman, show that when aluminium compounds are given by mouth to dogs, only insignificant changes in the amounts of aluminium in different tissues are found, and it follows that aluminium salts are not absorbed from the alimentary tract, except in traces. As a result of a scare in the United States, that the use of aluminium baking-powders was dangerous to health, the Department of Agriculture instituted an inquiry. The report, published in 1914, describes experiments on 26 university students carried out in three different universities, who were given amounts of alum varying from 0·2 to 10·0 g. daily for about six months. It was unanimously reported from the results of these experiments that the amounts of alum likely to be consumed as a result of the presence of alum in baking-powder—estimated as a little over gr. 1 of aluminium per person per day—are much too small to have any ill-effect. The amounts of aluminium to be found in food cooked in aluminium vessels are estimated from analyses carried out by Massatch to be about gr. 1/10 per person daily. It is seen that the dangers arising from aluminium utensils have been thoroughly investigated by many workers, on many species of animals; they have also been investigated with equal thoroughness on man. These dangers, said Dr. Burn, are non-existent; and clinical reports that symptoms of abdominal pain are relieved by discontinuing the use of aluminium must be ascribed to psychological effects, which are very common in medical practice.

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[1] THE LANCET, 1931, i., 35; 1931, ii., 595, 662, 715.

OCULAR MOVEMENTS

IN his Bowman lecture, delivered at the recent annual congress of the Ophthalmological Society of the United Kingdom, held at Edinburgh, Prof. J. van der Hoeve began by touching on Bowman's friendship with the leading Dutch ophthalmologists of his time. The close association of the two countries at that time in ophthalmological matters had, he said, happily persisted until now. He then gave a masterly description of the extrinsic musculature of the eyeball, of the movements executed by it and of the mechanism of these movements. He compared the movements of the human eyes with those of the rabbit, in which animal the absence of a macula and the slightness of the overlap of the visual fields causes considerable modification of the ocular movements. He showed how the action of each ocular muscle alters according to the primary position of the globe; in fact, the more the mechanism of ocular movements is studied the more complex the question is found to be, for even the simplest movement is executed by the agency of a perfectly balanced synkinesis of all 12 muscles. By means of explanatory diagrams, sketches, and photographs, Prof. van der Hoeve reviewed the experiments which had been carried out in the past on animals and men in the investigation of ocular movements. The simpler animal experiments consisted of photographing the eyes of an animal which was subjected to various movements in space on a board capable of rotation in any plane; compensatory movements of the eyes during these passive movements were elicited. Similar experiments were performed on the human subject, bound to a revolving stretcher capable of similar complex movement; the same apparatus was used in the investigation of nystagmus. More complex, though more portable, apparatus was used by the investigators, mainly Dutch and German, of the existence and position of the centre of rotation of the eyeball. As a result of his own studies, and from a consideration of the work of others, Prof. van der Hoeve has been forced to the conclusion that there is no such thing as a fixed centre of rotation for the eye, but that rotation occurs around a point most suitable and most economical for the particular movement which is being carried out. The formula which has hitherto been accepted—that rotation of the globe occurs around a fixed point, with the ocular muscles acting in a line from the centre of their origin to the centre of their insertion—must be abandoned, and the alternative accepted, that the eye goes about any particular movement in the easiest, simplest, and quickest way, irrespective of the movements which preceded it or are to follow it. The lecturer hinted at the likelihood even of separate fibres of the same ocular muscle having different actions under different conditions. At the conclusion of his lecture Prof. van der Hoeve referred to the question of periscopic spectacle lenses designed and fitted with respect to a fixed centre of rotation of the globe. The idea underlying their prescription and use was, he said, a mistaken one. So far from their being peculiarly adapted to the globe in its movements, it was likely that the globe adapted itself to the glass. Hence the desired optical result was achieved in the end.

OUR HOSPITALS

THE second issue of the Hospitals Year Book[1] is far more convenient to handle than its predecessor, since the directory, which occupied more than half its pages, has been omitted. This omission allows the insertion of interesting surveys of various aspects of hospital work. The volume, which measures roughly 11 by 9 inches, is divided into two parts. Part I., which takes up 169 pages, contains a brief financial review by Sir Charles Harris, honorary financial consultant to the Central Bureau of Hospital Information; a general survey of the work and finance of voluntary hospitals in Great Britain and Ireland for the year 1930; and notes on the Road Traffic Act, 1930, on new hospital buildings, and on the relationship between the voluntary hospitals and the local authorities under the Local Government Act, 1929. The report by the Joint Committee of the Association and the British Medical Association on the payment of visiting medical staffs of voluntary hospitals is set out in full, and the rest of this part of the book is taken up with tables. These provide information on the volume of work done in voluntary hospitals, and on the income and expenditure on maintenance account, with an analysis of the sources of income and the principal items of expenditure. The average cost of in-patients and out-patients in general and special hospitals is also tabulated. Less detailed accounts are supplied of the work and staffing of municipal and public assistance hospitals, mental hospitals, and sanatoriums. Part II. of the Year Book contains, among other material, an article on road accidents by Sir Alexander Butterworth, an appreciative note on THE LANCET Commission on Nursing, of which the recommendations are set out in full, an account of the work and conditions of training of a hospital almoner, a tabulated list of new buildings or extensions completed by voluntary hospitals during the last two years, and a list of memoranda on matters of administrative interest to hospitals, prepared by the Central Bureau of Hospital Information. Most of those have already been published, but Nos. 38 to 50 are here set out. They deal with contributory schemes, the domestic and nursing staffs of hospitals associated with medical schools, the conditions under which medical staffs give their services in cottage hospitals where the hospital is in receipt of income from contributory schemes, the duties of a senior resident medical officer, and so forth.

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[1] An Annual Record of the *Hospitals of Great Britain* and Ireland, issued under the auspices of the British Hospitals Association and the Joint Council of the Order of St. John and the British Red Cross Society. London: Central Bureau of Hospital Information. 1932. Pp. 268. *7s. 6d.*

In a foreword to the Year Book, Sir Arthur Stanley points out that in 1930 the income of the voluntary hospitals for the year exceeded their expenditure by nearly £750,000, though, since this surplus was divided unevenly, some hospitals remained in dire need at the end of that year. He calls attention also to the growth of accommodation, amounting to 1500 beds in the year. That the year under review is 1930 and not 1931 is regrettable, for information so out of date, however cheering, can have little bearing on the position to be faced now that we are approaching the second half of 1932. Sir Charles Harris reproaches the hospitals themselves for this lag period, since less than half of those outside the scope of King Edward's Hospital Fund for London, which insists on early returns, sent in the annual reports from which this volume is largely compiled in the first half of 1931, and 10 per cent., including some large hospitals, delayed till November or even December of that year. He complains also of the imperfect standardisation of the records and accounts, which though rectified "for all practical purposes" in this volume, involved correspondence and further delay in the date of its issue. A plaint even more serious, because it is addressed to voluntary hospitals as a whole, and not only to defaulters, is implied in the paragraph which concludes the section of the Year Book dealing with the definition of their relations with local authorities. The intention of the Local Government Act, 1929, was obviously, as is here stated, to lay quietly and without hurry the foundations of a bridge between two organically different bodies, each now charged with more or less similar duties. But, the argument continues, no public authority having determined on a policy embodying certain broad principles can be expected to modify it in many different ways to suit the views and wishes of each individual hospital. It is essential, therefore, that the voluntary hospitals should endeavour not only to think collectively but also to strengthen the machinery for expressing their considered views. It is true that the essence of the voluntary system lies in the independence of the units forming it, and that any measure of active central control that deprived them of that independence would probably mean their end; but central control and joint action are distinct things, and just as the former would end the voluntary hospitals, the want of the latter, in the view of their own central organisation, will inevitably bring about the same result. We ourselves are not so certain of this; the voluntary hospitals have survived for long on a basis of individualism and rivalry rather than coöperation. But a plea expressed by those who have evidently sought in vain to induce them to speak with one voice should not be lightly dismissed.

It is reinforced by the coöperation achieved between those hospitals which come within the scope of King Edward's Hospital Fund for London, the annual meeting of which was held on June 7th. It is a notable achievement that this Fund has been able not only to increase its distribution, but to add substantially to reserve. The Prince of Wales, who presided at the meeting, was able to say that in 1931 the voluntary hospitals in London had, as a whole, more than balanced their budgets, the total of the surpluses (in 82 hospitals) exceeding the total of the deficits (in 57 hospitals) by £65,000. The Prince called for an intensive effort to reinforce the weak spots, while still keeping up supplies to the rest, and this message has a wide application.

INTERMITTENT GROWTH OF CHILDREN

AN investigation by the department of biology and public health of the Massachusetts Institute of Technology[1] has had some suggestive results which may have a practical application. Children in certain elementary schools were weighed regularly every month, always at the same time of day, and the extent to which growth was intermittent was noted, the children being classified on the basis of whether they failed to gain for one, two, or more months. Comparison was then made between a group who had failed to gain weight over a period of three months and a control group who had never failed to gain in a two-month period during a whole year, in respect of their health habits as regards diet, sleep, and exercise, and the presence or absence of defects or diseases. The results show that whilst intermittency in increase of weight does not differentiate absolutely between children who do and who do not require attention, yet it has significance which cannot be overlooked. Serious physical defects were nearly three times as numerous, and affected twice as many children, in the former group, while nearly three times as many also had two or more important unhygienic habits, such as insufficient protein and vitamins in the diet, inadequate sleep, or deficiency of liquid and roughage. The results point to the value of regular weighing of all children. This is, of course, a routine practice in child welfare clinics, nursery schools, and open-air schools. School medical inspection provides for the taking of heights and weights, but in many areas this is not carried out and in any case the four-yearly intervals between the routine inspections render such measurements valueless for the individual child. From the observations in Massachusetts it seems desirable to weigh all children of school age, either at monthly or at least three-monthly intervals, and to refer all those failing to gain over a period of three months or more for examination as "specials" in the scheme of medical inspection. Failure to gain, or even loss of weight, may not always be important, and must always be judged in relation to other factors; but these would be matters to be determined by the examining doctor.

Sir Henry Wellcome has been elected a Fellow of the Royal Society. Among the new foreign members are Mr. Graham Lusk, professor of physiology in Cornell University Medical College, New York, and Prof. Theobald Smith, director emeritus of the department of animal pathology of the Rockefeller Institute of Medical Research.

Sir Arthur Keith, F.R.S., will deliver the Stephen Paget lecture at the annual general meeting of the Research Defence Society to be held at the London School of Hygiene and Tropical Medicine at 3 P.M. on June 15th. His subject is Some Aspects of the Modern Conflict between Reason and Sentiment.

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[1] Turner, C. E., Lytle, Ellen, and Winnemore, Charlotte: Intermittency of Growth as an Index of Health Status. Amer. Jour. Pub. Health, May, 1932, p. 455.

SPECIAL ARTICLES

WHAT IS WRONG WITH THE MEDICAL CURRICULUM?

(A Series of Opinions Contributed by Request).

I.

BY MAJOR GREENWOOD, D.SC., F.R.C.P., F.R.S.,
PROFESSOR OF EPIDEMIOLOGY AND VITAL STATISTICS IN THE UNIVERSITY OF LONDON.

THE object of this symposium on medical education is, I believe, to focus the criticisms of persons whose experiences have been in different fields of medical work. The possession of a registrable diploma in medicine does not qualify its holder to be a judge of *all* the needs of *all* medical men. As a boy I lived in the atmosphere of an east end general practice; as a very young man I spent four happy years as the assistant of a great physiologist. These experiences, however profoundly they may have influenced my personality, give me no title to pose as an expert critic of either clinical or laboratory teaching. Such claim as I have to express *any* opinion upon educational questions is based upon a rather peculiar experience. It has been for a good many years part of my duty to read and criticise reports and papers dealing with an immense variety of subjects within the field of medical science. The only common factor has been that the writers had treated or, it was thought, ought to have treated some of the subject matter from a quantitative or statistical point of view. Not infrequently the purely numerical aspect has been of minor importance, my colleagues on the Statistical Committee of the Medical Research Council and I have had to consider primarily the logical value of the arguments presented. The result is that, leaving entirely out of account specific issues of private or public controversy in respect of which one's judgment is clouded by personal predilections and vanity, I have had rather exceptional opportunities of gauging the qualities of medical literature. I wish first to try to compare the general characteristics of what my colleagues and I read now with what used to come to us as individual critics 20 years ago.

RELIANCE ON TECHNIQUE.

The most striking difference is certainly an increasing reliance on technique. Even as recently as 20 years ago medical writers would still challenge peremptorily the demand that their data should be treated statistically at all. For fairly obvious reasons I do not think their objections were logical, but the point is that they did state objections of principle. That attitude has passed away. The writer, who 20 years ago would have said that statistical method was mere "mathematical" juggling having no relation to "practical" matters, now seeks for some technical "formula" by the application of which he can produce "significant" results. I am not so poor a psychologist as to neglect the consideration that a committee of experts, or even an individual "professor" of 51, will be approached more tactfully than an unknown young man of 31, but I do not think that is a complete explanation; the change is more fundamental. To put it epigrammatically, and therefore, of course, to overstate it, the change has been from thinking badly to not thinking at all, from thinking that statisticians were triflers to believing that statisticians are patentees of more or less powerful magic. The professional credit of expert statisticians has increased but there has been no dissemination among medical writers of the *principles* of statistical reasoning. Medical papers now frequently contain statistical analyses, and sometimes these analyses are correct, but the writers violate quite as often as before, the fundamental principles of statistical or of general logical reasoning.

This is not peculiar to the special case of statistics; I have sufficient recollection of the principles of physiology to perceive that this branch of science has been treated in the same way. Much more use is made of the technical vocabularies of particular branches of experimental physiology, in particular of those concerned with the nervous system, the endocrine system and general metabolism, but the method of use often moves the real adepts to laughter or tears. One finds loose verbal analogies passing as deductions and mere jargon masquerading as precise, scientific exposition.

DECREASING LITERACY.

A correlative change is decreasing literacy. Most examiners have, I suppose, noticed this. On the whole the standard of expression in the examination papers of post-graduate candidates now is, I think, not higher than that of undergraduates in the medical schools 25 years ago, and editors make the same complaint. I do not wish to exaggerate the importance of this. Many people reason well who write ill; some—not very many—write beautifully and reason badly. Perhaps the schoolmasters of one or more generations ago overstated the claims of a literary education. The case made by the teachers of our teachers against a "classical" education and in favour of the natural sciences as instruments of culture was that the average boy or girl never acquired a sufficient mastery of the mere technique of grammar and vocabulary for Latin and Greek literature to become for them an instrument of mental training. On the other hand, the "facts" of the natural sciences were intrinsically interesting to young people who might be spurred on by that interest to take pains to understand the difficult processes of thought which had led to the discovery of such exciting things. Even 50 years ago there were men of science who had doubts. I think the great physicist Tait was one of these; he argued that science was very hard, that its study was best begun at a comparatively mature age, *after* a schooling in "dull" logical, mathematical reasoning, and that difficulties did not vanish because one ignored them. Tait would have been horrified by the suggestion that an average boy or girl of from 16 to 17, whose general education was defined by the standard of a school-leaving certificate, was fit to be subjected to an exclusively scientific-technological course of instruction. Yet that is the fate of the rank and file of medical students. At the age of 17 their training begins to acquire a flavour of technicality, and within a few years it becomes wholly technical. Very few teachers of the "preliminary" and no teachers of the "intermediate" subjects are bold enough to maintain that they neither know nor care whether the "facts" and technical manipulations which are incidental to their teaching are of practical use to medical men, and that they mean to use chemistry, physics, biology, human anatomy, or physiology primarily as instruments for training their pupils to observe accurately and think logically.

I have indeed heard "intermediate" teachers, none of whom had ever treated a patient in their post-graduate lives, waxing eloquent over the unpractical attitude of the "preliminary" teachers and urging that the students ought to be taught *useful* physics, how to wire a switchboard and handle X ray apparatus, instead of unpractical general principles. These apostles of the practical forget quite recent history. A majority of London-trained medical men over 60 were taught anatomy and physiology by surgeons and physicians. The present generation of whole-time specialist teachers of "intermediate" sciences owe their existence to a belief that the educational not the mere technical value of the sciences of physiology and anatomy was too great for it to be right to make the teaching of these subjects a subsidiary occupation. In these economically strenuous times there are plenty of clinicians who know from practical experience, better even than physiological Fellows of the Royal Society, not how much physiological technique *ought* to be, but how much *is* "practically" useful to a "doctor," and are quite willing to impart that modicum without aspiring to become whole-time university professors. In the end the men of science may find themselves relegated to research institutions and their pupils reduced to a small number of really educated people. That is, of course, quite an attractive prospect from the point of view of any scientific man who cares for his work; anybody who cares for his subject must indeed be altruistic to refrain from supporting a policy which may have such a consummation. But a majority of "intermediate" and "preliminary" teachers are, I suspect, altruistic enough really to care about the education of young people, and to believe that trying to mould the unpromising clay of a semi-literate child of 17 into something not preposterously unlike a young man or woman with a disciplined mind, is almost as praiseworthy as writing papers in the *Philosophical Transactions* or prescribing for Cabinet Ministers. Most of them recognise that the innate variation of human aptitudes is so great that while A can be trained to think by the use of the concepts and methods of, say, physics, but can make nothing of biology, to B physics are mere sound and fury, something to be memorised, but biology is fascinatingly instructive.

REMEDY—A WIDER LATITUDE OF CHOICE.

Hence it might be suggested that instead of forcing all students through the same educational mill, a wider latitude of choice should be permitted, that those who can learn to think in the biological laboratory should be encouraged to spend more time there and less in the physical laboratory, and that the key of the wards should not be a stereotyped common examination but an individualised special examination. We might even go further and support the paradox that proof of having mastered *any* branch of human knowledge, from Greek philology to pure mathematics—so far as a youth can be said to have mastered anything—should admit a student to the clinical stage. My experience of training post-graduates who have come into epidemiological and medical-statistical work from a wide range of occupations is that *any* kind of serious intellectual discipline is better than the general smattering of technical medical knowledge which is all some young medical graduates seem to have acquired. That is confessedly a narrow and highly specialised experience, but I suspect that an educational experiment well worth trying would be to dispense a certain number of good honours graduates in non-medical subjects, humanistic or scientific, from the pre-clinical stages, and to try them out ten years later against our ordinary mass products. Of course they would have had to learn, by their own efforts and in their own time, much which the others knew. But, having learned how to learn, they would, I believe, succeed.

I have the impression—it may, of course, be a mere illusion—that we medical folk are a little too prone to claim for our curriculum virtues which our opposite numbers in the legal profession do not claim on behalf of *their* undergraduate training. Three sons of a middle-class family choose, or have chosen for them, the professions of barrister, solicitor, and "doctor." In real life, as we all know, after one has been called, another admitted, and a third qualified, each must spend laborious and unremunerative years in really learning how to practise. The Bar Council and the Law Society do not, I think, pretend that the courses of training they prescribe render young people of 22 to 25 competent to perform all or even most of the tasks which an abstract "public" might expect an ideal "lawyer" to be able to carry through. I think we do, implicitly if not explicitly, make the claim that young "doctors" are in some mysterious way better equipped to grapple with quite as difficult tasks as come the way of "lawyers," than fledgling barristers or solicitors are fitted for their duties. Why? Surely not because the intellectually most brilliant member of the family is always chosen to become a "doctor." Equally surely not because the medical profession is reserved for the son or daughter who has had the best general education. Perhaps it is a relic of the priestly tradition—some of us *are* rather fond of talking about the laity with a certain superiority. The one claim as against the legal profession which can be made is that our under-graduates are put through a much fiercer technical drill. But, if that is not based upon a sound general education, we must be turning out not commissioned officers but corporals and drill sergeants, or, to change the metaphor, not motor engineers but garage hands. I do not think Mr. Bernard Shaw is the only *layman* to notice how poor a show even highly successful "doctors" often make when they are engaged in controversy or are speaking pontifically on border-line questions, such as the rights and wrongs of vaccination, psycho-analysis, or the cause of cancer. What the "doctor" says is very often not evidence; the "doctor" has never been taught what is and what is not evidence. Perhaps a little more familiarity with general principles and a *little less familiarity* with the technique of new "therapies" is a prescription which might be tried.

DR. BARNARDO'S HOMES: ANNUAL MEETING.—At the annual general business meeting of Dr. Barnardo's Homes: National Incorporated Association held on May 18th it was stated that 111,501 destitute boys and girls had entered the homes up to the end of last year, and that 17,019 children and young people were dealt with during 1931. In that year 1643 boys and girls and babies were admitted to the benefits of the homes—1340 permanently and 303 temporarily—and 8247 were in residence. These included 1319 children under 5; 447 sick, crippled, or afflicted children; 1124 boys and girls under industrial and technical instruction; and about 400 in training for the Navy and mercantile marine. The homes have no waiting-list and no voting system. The head offices are at 18 to 26, Stepney-causeway, London, E.1.

GENERAL MEDICAL COUNCIL

SUMMER SESSION, JUNE 2ND–5TH, 1932.

Committee Work

THE NEW PHARMACOPŒIA.

Sir Donald Macalister, chairman of the Pharmacopœia Committee, laid before the Council the completed text of the British Pharmacopœia, 1932. It was, he said, rather larger than the 1914 edition, chiefly because of the work of the League of Nations in framing international methods for controlling processes and standardising drugs. The cost of production had inevitably been greater, and the Committee recommended that the price should be 21s., with large-paper copies 10s. extra. Copies would be exposed for inspection in the offices of the Council in London, Edinburgh, and Dublin for three months before publication. An edition of 30,000 copies was to be printed of which 20,000 would be bound. The report contained a warm expression by the Committee of its thanks to Dr. A. P. Beddard, the chairman, and the members of the Pharmacopœia Commission, and to all their helpers. The Commission will remain in office until Sept. 30th, 1933, to deal with matters arising out of the new text.

TEACHING OF PREVENTIVE MEDICINE.

The recommendations of the Society of Medical Officers of Health for the teaching of preventive medicine have been under the consideration of the licensing bodies. The opinions of these bodies, with one exception, have now been received, and were submitted to the Council by the joint Education and Examination Committee specially formed to deal with the recommendations.

With five exceptions the licensing bodies appear to demand a separate examination in public health and preventive medicine, but they are disinclined to make the regulations governing admission to this examination more comprehensive or standardised. There is, however, general approval of the recommendation that teachers in the various subjects should coöperate in the teaching of preventive medicine. A number of replies state that questions upon the preventive aspects of medicine are from time to time included in the final examination. In a number of centres a local medical officer of health is taking part in the training of medical students, and in almost all cases visits to institutions of public health interest are arranged. On the number of those lectures in the course in hygiene and public health which deal more particularly with the prevention of disease in the community, there is a difference of opinion. The University of London and the English Conjoint Board do not approve of any extension of the teaching by specialists in preventive medicine, taking the view that the interests of medical education are best served by the teachers in each of the clinical subjects coöperating in the training of students in the methods of prevention of disease.

EDUCATION OF STUDENTS BEFORE REGISTRATION.

Prof. James Rice's report on the pre-registration examinations was submitted by the President, as chairman of the Examination Committee. The most significant point in Prof. Rice's classification of the various methods of the licensing bodies is the question of whether or not instruction and examination in chemistry and physics are insisted upon after the medical curriculum has been commenced. It was never, the Committee pointed out, the intention of the Council to recommend that the pre-registration examination should be the sole test in chemistry and physics. In the resolutions of 1923, it seems to be understood that there shall be further instruction in chemistry and physics "in their application to medicine" after passing the pre-registration examination, but it is by no means made clear. Much confusion has arisen with regard to the interpretation of this double reference to the teaching of chemistry and physics, and the reports make it evident that the exact meaning of this resolution must be defined. It is around the precise interpretation of these paragraphs that most of the difficulties concerning the pre-registration examination appear to centre.

The Committee considers that while the introduction of a pre-registration examination in chemistry and physics, with further instruction in them after registration, does not materially reduce the time devoted to pre-clinical studies, it can definitely improve medical education. If a student embarks upon his medical course with a grounding in chemistry and physics, it is possible for him to attend more advanced courses, which can be adapted to his special needs, during the first terms after registration. However, in order to gain the fullest benefit from the pre-registration examination, it is of the utmost importance that the post-registration courses in chemistry and physics should be adjusted very carefully to the needs of a medical student, and coördinated as far as possible with the further study of these subjects at later times in the curriculum. The post-registration courses would thus serve as a natural stepping-stone to the development and application of chemistry and physics in physiology, pharmacology, pathology, and clinical work, ensuring a fuller and more relative knowledge of the subjects and a greater cohesion between teaching and application.

OBJECTIONS TO THE EXAMINATIONS.—The Committee, in its report, reviewed the more serious objections to the pre-registration examination. The first of these is that, although a large proportion of secondary schools can teach chemistry and physics well enough for the examination, others cannot; consequently the teachers of chemistry and physics in the medical schools are confronted by students at two levels; some have passed a pre-registration examination and others know nothing about the subjects. The difficulties created by this situation have been met in various ways, not all of them satisfactory to Prof. Rice. Since, however, an increasing number of secondary schools are making arrangements to give adequate instruction in elementary chemistry and physics, this objection will probably lose much of its significance in most centres. The resolutions of the Council have not yet had their full effect upon the secondary schools. Many schools have made special provision for the science training of future medical students, expecting that their responsibility will continue.

Another objection is that to encourage the study of chemistry and physics in the later years at school may lead to too early specialisation and to the neglect of general education. The Committee admits the importance of the point, but emphasises Prof. Rice's opinion that the pre-registration standard should not be as high as that of the higher school certificate, and should be obtainable in a year. It seems, the report remarks, doubtful, considering the recent speeding-up of the school curriculum, whether the considerable advantage gained by a student who knows the main principles of chemistry and physics before entering on a medical course does not outweigh this danger. The same consideration also answers the third objection—that the pre-registration examination merely adds an unnecessary hurdle.

The Committee therefore gave as its opinion :—

1. That a knowledge of elementary chemistry and physics before entrance upon the medical curriculum is desirable.

2. That such knowledge of elementary chemistry and physics must be supplemented by further instruction and

examinations in these subjects in their relation to medicine during the first year.

3. The courses in chemistry and physics included in the curriculum should be adapted to the special needs of the medical student and coordinated with the teaching in the later stages of the curriculum.

Prof. J. B. S. STOPFORD, in introducing this report, said that the Committee was still at the inquiry stage; educational matters were involved and further information was needed from the licensing bodies.

Mr. K. W. MONSARRAT asked the Council to consider the advisability of including biology in the early training.

Sir H. B. BRACKENBURY was also of opinion that biology ought to enter into the picture of these preliminary studies. The secondary schools made considerable provision for the teaching of chemistry and physics, but not much for the teaching of biology; in the last five years however such provision as existed had been greatly extended and improved. The time, he thought, had come when the Council should say something to encourage the schools that made this provision.

OPHTHALMIA NEONATORUM.

Prof. J. B. LEATHES, chairman of the Education Committee, presented its report. The Committee had, he said, received from the British Medical Association the following resolution of its Representative Body:—

> "That the Council of the B.M.A. should point out to the General Medical Council that it is desirable that medical students should have opportunities of studying the care and treatment of ophthalmia neonatorum, the best time for such instruction being during attendance on the course of fevers."

and the Committee had resolved as follows:—

> "That the British Medical Association be informed that it was intended that the care and treatment of ophthalmia neonatorum should be included under 'Diseases of the Eye' in the resolutions of the Council in regard to professional education, and it was not considered expedient to refer to specific diseases by name or to define how and where opportunities for studying them should be obtained."

Mr. BISHOP HARMAN considered the answer quite a good one, but the difficulty was that it did not meet the new conditions of treatment. Nowadays infants and their mothers were removed at once on notification to special hospitals; and the student in the general hospital did not get a chance of seeing cases. It was quite impossible to impress upon students the serious consequences of the disease unless they could be shown cases.

Mr. H. L. EASON corroborated Mr. Bishop Harman's remarks from his experience at Guy's Hospital. The disease had been extinct for several years in the school's maternity district, and cases which arose outside it were sent direct to an institution.

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The PRESIDENT said it was a matter for the schools. It should be easy for a teacher to make arrangements for his students to see these cases.

MEDICINE AND THE LAW

Prompt Notification of Accident

THE Workmen's Compensation Act stipulates that an employer shall receive notice of a workman's accident "as soon as practicable after the happening thereof," unless it is found that the employer was not prejudiced by the want of notice, or that the want of notice was occasioned by "mistake, absence from the United Kingdom, or other reasonable cause." Naturally the workman's excuse for delay in notifying will usually be that he thought at first that his injury was trivial. This answer has been held insufficient in itself, though of course the decided cases turn each upon its own set of facts.

Here is a case recently decided by the House of Lords. In November, 1929, a 17-year-old workman injured his shoulder while employed in shifting pit-tubs for a colliery company. He mentioned his injury to a fellow-workman, rested several minutes, and finished his shift with assistance, then went home, told his mother, and lay down on a sofa. According to his mother he became muddled in his mind that evening, and was unable to get off the sofa, and so continued till he went to hospital in January. According to the doctor, who saw him on the day after his injury, the boy was rational and master of himself for three or four days, and seemed likely to be all right in a week. After four days the doctor diagnosed septic arthritis; the patient underwent nine operations in hospital owing to osteomyelitis, and came out a complete wreck in the following May. No notice of the accident was given before March, the boy explaining that he thought at first his injury was trivial. The county court judge found that (1) osteomyelitis developed after the injury which was therefore an accident; (2) the employers were not prejudiced by non-notification because no more could have been done for the patient than was actually done; and (3) the boy reasonably thought his accident was trivial at first, and afterwards was not in a condition to give notice; for these reasons the judge held that there was reasonable cause for the delay in giving notice. The Court of Appeal overruled this decision on the grounds that (1) notice was not given as soon as practicable, and there was no reasonable cause for the delay because the county court judge had accepted the doctor's evidence which showed that the workman was in a condition to give notice during the first few days; (2) the boy's belief that his injury was trivial was no excuse; (3) the employers were prejudiced in their defence by the want of notice because, the question being whether or not the osteomyelitis was latent in the patient at the time of the accident, it was vital for the employers to have had the chance to examine the workman as soon as possible after the injury. In confirming this decision the House of Lords has ruled that the employers were prejudiced and that there was no reasonable cause for non-notification. If the case seems a hard one, it was only reasonable for Parliament to enact, and only right for the law courts to enforce, the general principle that there should be facilities for prompt medical examination of the workman at the earliest possible moment.

Coroner on Osteopath's Treatment

At a recent inquest at Southend the deceased was reported to have had a dislike of doctors. He was attended by an osteopath. A medical practitioner gave evidence that he had examined the patient and had advised calling in a surgeon. This led to an argument on the merits and demerits of surgeons, and the advice was not followed. Sir Bernard Spilsbury, who conducted a post-mortem examination, found death to be due to a large abscess near the kidney; had the patient taken the doctor's advice and undergone an operation, there was every chance, said Sir Bernard, of a complete cure. The osteopath gave evidence that he had provisionally diagnosed an accumulation of urine in the kidney and the pelvis. The widow apparently said that the osteopath told her as late as the morning of his death that her husband was all right and that there was nothing wrong. The coroner observed that there was no evidence which would justify the finding of manslaughter which normally follows if anyone undertakes the responsibility of caring for life and is guilty of gross negligence whereby life is lost. In the coroner's view, however, the osteopath's diagnosis was wrong; the osteopath should have seen that the patient was gravely and seriously ill and required the attention of a qualified medical practitioner. The osteopath should have advised the calling in of such a practitioner. There was nothing grossly wrong in the treatment administered by the osteopath: it was of no practical good or effect.

IRELAND

(FROM OUR OWN CORRESPONDENT.)

THE IRISH HOSPITALS SWEEPSTAKES.

THE sweepstake on the recent Derby has attracted more money than any of the previous ones. The total receipts amounted to £4,128,484, of which the share for the hospitals should be 25 per cent. or £1,032,121. Only half of this sum, however, will reach the voluntary hospitals, as the Minister for Finance is enacting a levy of 25 per cent., and the rate-supported institutions draw 33 per cent. of the remainder. The voluntary hospitals will, therefore, in fact, benefit less than they did from the Grand National sweepstake, the sum due to them from that event being £560,885. Last week in the Dail, Dr. Ward (parliamentary secretary to the Minister for Local Government and Public Health), in answer to a question, stated that the amounts available for the poor-law hospitals from the sweepstakes on the November Handicap of 1931 and the Grand National of 1932 were £236,721 and £270,158 respectively. He said that the money would be distributed according to local needs with regard to the area and the population to be served, the urgency of the work proposed, and local financial and economic circumstances. He added that if there was any delay in dealing with the distribution or release of the money it would be due to the failure of the local authorities to submit the necessary plans and specifications.

It is understood that the report of the committee of reference on the distribution of the funds available from the November Handicap sweepstake has been handed to the Minister for Justice. It is hoped that the committee may have something to say on the general question of a hospital policy for Ireland, and in particular for Dublin.

ASSOCIATION OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.

For some time past plans have been on foot to establish an Association of the Royal College of Surgeons in Ireland, and the Association was formally constituted on June 3rd, when a meeting of Fellows and Licentiates was held and rules adopted. Sir William Taylor was elected President, and Dr. J. P. Brennan and Mr. James Smith honorary secretaries. Some 500 past students are already members. On the evening of June 4th the Association celebrated its birth by the members dining together in the College. Sir William Taylor was in the chair, and there was a large number of members and guests present. The President of the College, Mr. R. A. Stoney, in responding to the toast of the College, said that it was in a most flourishing condition. They had over 60 new students entering the schools within the past year.

JUBILEE OF THE ROYAL ACADEMY OF MEDICINE.

The Royal Academy of Medicine in Ireland celebrated its jubilee on May 27th by a conversazione. Prof. T. G. Moorhead, the President, gave a brief account of the history and work of the Academy. It was founded in 1882 by the amalgamation of five older societies—the Medical Society, the Surgical Society, the Pathological Society, and the Obstetrical Society. These societies had themselves a venerable history, the Surgical Society being then in its fiftieth year while the Medical Society was a few years older. At least five of the original members of the Academy survive,—Sir John Moore, Sir William Smyly, Dr. Richard A. Hayes, Dr. J. C. O'Carroll, and Dr. H. W. Oulton. In its 50 years of life the Academy had kept in the front of medical progress, and had enhanced the reputation of the Dublin school. Dr. Moorhead asked the Academy to accept, as a gift from him, a badge to be worn by future presidents. The badge is a beautiful piece of enamel work.

The President's brief address was followed by a lecture on Sir William Petty, delivered by Dr. T. P. C. Kirkpatrick. Dr. Kirkpatrick gave a very interesting account of that remarkable man, at once man of science, administrator, and geographer, holding at one and the same time the professorship of anatomy at Oxford, the professorship of music at Gresham College, London, and the physician-generalship of the Army in Ireland.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. D. A. Newbery to be Surg. Lt.-Comdr.
L. G. Yendoll to be Surg. Lt.
Surg. Lt.-Comdr. J. G. Holmes is appointed to *Coventry*.

ROYAL ARMY MEDICAL CORPS.

Col. J. C. Kennedy, late R.A.M.C., is placed on half pay.
Lt.-Col. P. J. Hanafin, from R.A.M.C., to be Col.
Maj. C. H. O'Rorke retires on retd. pay.

TERRITORIAL ARMY.

Lt.-Col. C. Corfield, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

Lt. N. H. Watson to be Capt.

INDIAN MEDICAL SERVICE.

Lt.-Col. H. Ross retires.
Capt. J. N. Madan relinquishes his temp. commn.

ARMY EXAMINATIONS.

The results of the examination (in written subjects) of officers, with a view to promotion in the Royal Army Medical Corps, which was held in March last, are as follows: Majors J. C. Denvir, G. D. Grippen, G. Moulson, A. K. Robb, P. A. Stewart, G. K. Fulton, and J. D. A. Champney, and Capts. W. L. S. Cox and A. E. Campbell.

COLONIAL MEDICAL SERVICE.

Dr. F. H. N. Cruchley has been appointed Medical Officer, Jamaica; Dr. R. S. Begbie, Assistant Bacteriologist, Hong-Kong; Dr. J. P. Fehily, Health Officer of Port and Inspector of Emigrants, Hong-Kong; and Dr. J. H. Pottinger, Assistant Government Medical Officer of Health British, Guiana.

examinations in these subjects in their relation to medicine during the first year.

3. The courses in chemistry and physics included in the curriculum should be adapted to the special needs of the *medical student and coördinated with the teaching in the* later stages of the curriculum.

Prof. J. B. S. **Stopford**, in introducing this report, said that the Committee was still at the inquiry stage; educational matters were involved and further *information* was needed from the licensing bodies.

Mr. K. W. **Monsarrat** asked the Council to consider the advisability of including biology in the early training.

Sir H. B. **Brackenbury** was also of opinion that biology ought to enter into the picture of these preliminary studies. The secondary schools made considerable provision for the teaching of chemistry and physics, but not much for the teaching of biology; in the last five years however such provision as existed had been greatly extended and improved. The time, he thought, had come when the Council should say something to encourage the schools that made this provision.

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Mr. **Bishop Harman** considered the answer quite a good one, but the difficulty was that it did not meet the new conditions of treatment. Nowadays infants and their mothers were removed at once on notification to special hospitals; and the student in the general hospital did not get a chance of seeing cases. It was quite impossible to impress upon students the serious consequences of the disease unless they could be shown cases.

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The **President** said it was a matter for the schools. It should be easy for a teacher to make arrangements for his students to see these cases.

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Here is a case recently decided by the House of Lords. In November, 1929, a 17-year-old workman injured his shoulder while employed in shifting pit-tubs for a colliery company. He mentioned his injury to a fellow-workman, rested several minutes, and finished his shift with assistance, then went home, told his mother, and lay down on a sofa. *According to his mother he became muddled in his* mind that evening, and was unable to get off the sofa, and so continued till he went to hospital in January. According to the doctor, who saw him on the day after his injury, the boy was rational and master of himself for three or four days, and seemed likely to be all right in a week. After four days the doctor diagnosed septic arthritis; the patient underwent nine operations in hospital owing to osteomyelitis, and came out a complete wreck in the following May. No notice of the accident was given before March, the boy explaining that he thought at first his injury was trivial. The county court judge found that (1) osteomyelitis developed after the injury which was therefore an accident; (2) the employers were not prejudiced by non-notification because no more could have been done for the patient than was actually done; and (3) the boy reasonably thought his accident was trivial at first, and afterwards was not in a condition to give notice; for these reasons the judge held that there was reasonable cause for the delay in giving notice. The Court of Appeal overruled this decision on the grounds that (1) notice was not given as soon as practicable, and there was no reasonable cause for the delay because the county court judge had accepted the doctor's evidence which showed that the workman was in a condition to give notice during the first few days; (2) the boy's belief that his injury was trivial was no excuse; (3) the employers were prejudiced in their defence by the want of notice because, the question being whether or not the osteomyelitis was latent *in the patient at the time of the accident*, it was vital for the employers to have had the chance to examine the workman as soon as possible after the injury. In confirming this decision the House of Lords has ruled that the employers were prejudiced and that there was no reasonable cause for non-notification. If the case seems a hard one, it was only reasonable for Parliament to enact, and only right for the law courts to enforce, the general principle that there should be facilities for prompt medical examination of the workman at the earliest possible moment.

Coroner on Osteopath's Treatment

At a recent inquest at Southend the deceased was reported to have had a dislike of doctors. He was attended by an osteopath. A medical practitioner e incident with which he is concerned. To the octor against whom the complaint is made it is nly one incident of many which probably happened n that particular day—e.g., one consultation or isit of many similar cases, and it is, of course, difficult r him to recall in detail precisely what happened, nless there was some salient point in the case. If, owever, his medical record is filled in with notes, uch as temp. 100·4 ° F.; resp., 36; pleuritic rub, t. base, it becomes very difficult for the patient to rove that the doctor did not take any interest in he case and hardly made any examination at all. he record moreover confirms the amount of ttendance given, often a matter of dispute between itnesses.

Failure to keep an adequate note of visits and ttendances is moreover not fair to other doctors, r quantitative extracts from doctors' records are ade usually on each inspection by the regional edical officer. He takes at random one letter of e alphabet and finds out the total attendance for e year on people whose names being with a particular tter. Suppose there are 50 record cards with names eginning with (say) B, there should be some 200 to 0 entries on all these cards; but if there are only 50 ntries present it appears that the doctor is only aying one visit or consultation per panel patient per ear instead of the usual (approx.) 4·5. The deficiency entry goes to swell the cost per attendance rate, aking the capitation fee appear too high, instead of ndicating the correct amount. Hence the failure keep accurate records is to be regretted in the terest of the insurance medical service as a whole, well as of the individual practitioner.

THE BIRTHDAY HONOURS

The list of honours issued on the King's Birthday ntains the names of the following members of the edical profession:—

K.C.M.G.

ieut.-General Sir John Goodwin, K.C.B., D.S.O., F.R.C.S.,
Governor of Queensland; formerly director-general of Army Medical Services.

K.B.E.

ing-Commander Louis Greig, C.V.O., M.B.,
Gentleman usher in ordinary to H.M. the King.

Knights Bachelor

enry Britten Brackenbury, LL.D., M.R.C.S.,
Chairman of Council, British Medical Association.

lbert Ruskin Cook, C.M.G., O.B.E., M.D.,
Senior physician, Mengo Hospital, Kampala, Uganda.

ieut.-Colonel Francis Edward Fremantle, O.B.E., F.R.C.S., M.P.,
Chairman of the Parliamentary Medical Committee; formerly medical officer of health for Hertfordshire.

olonel Richard Arthur Needham, C.I.E., D.S.O., F.R.C.P.,
Formerly deputy director-general, Indian Medical Service; lately inspector of medical education in India.

rthur Stanley Woodwark, C.M.G., C.B.E., F.R.C.P.,
Physician and dean of the medical school, Westminster Hospital; lately medical arbitrator for trades union and friendly societies insurance funds.

C.B. (Military Division)

ajor-General Henry Edward Manning Douglas, V.C., C.M.G., D.S.O.,
Deputy-director of medical services, Southern Command, India.

ir Vice-Marshal John McIntyre, M.C., M.B., K.H.S.,
Director of medical services, Royal Air Force.

C.B. (Civil Division)

Hamilton Clelland Marr, M.D., F.R.F.P.S.,
Senior medical commissioner, General Board of Control for Scotland.

C.S.I.

Brevet-Colonel Frederic Percival Mackie, O.B.E., F.R.C.P., K.H.S., I.M.S.,
Late director of the Haffkine Institute, Bombay, and formerly chairman of the Plague Expert Commission of the League of Nations.

C.I.E.

Colonel Harry Malcolm Mackenzie, M.B., I.M.S.,
Inspector-general of civil hospitals, Punjab.

C.V.O.

Commander Morton Smart, D.S.O., M.D., R.N.V.R.,
Formerly medical officer in charge of the electrical department, Hospital for Sick Children, Great Ormond-street.

C.B.E.

Percy James Kelly, M.B.,
Surgeon-general, British Guiana.

Russell John Reynolds, M.B.,
Physician in charge of the department of radiology, Charing Cross Hospital; adviser in radiology to the Ministry of Pensions.

O.B.E. (Military Division)

Temporary Major Ernest Kenneth Campbell, M.B. F.R.C.S., R.A.M.C.
Consulting surgeon, Western Ophthalmic Hospital; eye specialist, Southern Command.

Temporary Major Hugh Davies-Colley, B.Chir., F.R.C.S., R.A.M.C.

O.B.E. (Civil Division)

Rao Bahadur M. K. P. Avargal.
Director of the Tuberculosis Institute and superintendent of the Tuberculosis Hospital, Madras.

Seemampillai Francis Chellappah, M.R.C.S.,
Senior medical officer of health, Ceylon.

Andrew Connal, M.D.,
Director of the Medical Research Institute, Lagos, West Africa.

Ralph Stransham Oldham, M.D.,
Principal medical officer, Ministry of Pensions.

Hugh Brindley Owen, D.S.O., M.B.,
Medical superintendent and principal, Medical School, Mulago, Uganda.

Harry Chapman Sinderson, M.D., F.R.C.P.,
Dean and professor of medicine, Royal College of Medicine of Iraq.

Major David Rees Thomas, M.B., I.M.S.,
Chemical examiner to the Government of the Punjab.

Kaisar-i-Hind Medal (Bar)

Rai Bahadur Lala Mathra Dass,
Assistant surgeon to the Viceroy of India.

Ernest Muir, M.D., F.R.C.S.,
Research worker in leprosy, School of Tropical Medicine, Calcutta.

Kaisar-i-Hind Medal.

Mrs. Mary O'Brien Beadon, M.B.,
Principal, Lady Hardinge Medical College, Delhi.

Miss Helen Marion Franklin, M.B.,
Medical superintendent, Lady Reading Hospital, Simla.

Albert Hailey Henderson, M.D.,
Medical missionary, American Baptist Mission, Taunggyi, Burma.

Charles Edward Vail, M.D., F.A.C.S.,
Surgeon and physician, American Presbyterian Mission Hospital, Miraj, Bombay.

London and Counties Medical Protection Society.—The annual general meeting was held at Victory House, Leicester-square, W.C., on June 1st, when the President, Sir John Rose Bradford, moved the adoption of the annual report and balance-sheet. The work of the society, he said, was steadily increasing and many grave cases had come within its purview during the year. Some 800 new members had joined during that period, a large proportion of them immediately after qualifying, but he thought the increase ought to be still greater in view of the wastage by death and resignation. Dr. C. M. Fegen, late treasurer and chairman of council, was appointed to combine the offices of financial secretary and general secretary on the retirement of Dr. Hugh Woods.

PANEL AND CONTRACT PRACTICE

Complaints

The General Medical Council now receives official information of cases in which the Minister of Health has taken disciplinary action in regard to practitioners whose names appear upon the panel. We learn from the report presented by the solicitors of the London and Counties Medical Protection Society to the annual meeting on June 1st that members of that Society frequently require advice and assistance in difficulties and troubles arising out of practice under the National Health Insurance Acts. Complaints by patients to insurance committees are frequent, and when doctors concerned receive copies of the complaints made against them, with a request for their replies, it is of the utmost importance that the accusations should be effectively dealt with from the first. In the preliminary inquiries by the medical service subcommittees into complaints, legal representation is not permitted, but there is nothing to prevent a defence society from giving advice and assistance in the preparation of replies to complaints. These are of varied character, as the following examples will show:

A member applied to the Society in regard to the decision on an insurance committee suggesting that he should pay the account of another doctor who had been called in in his place and so dispose of the complaint against him. The matter was carefully gone into and the member was advised under the circumstances to make the payment as an act of grace.

A member complained to the Society that the local secretary of an approved society was in the habit of filling in the doctor's certificate form on a sick sheet, and signing the doctor's name. The matter was investigated and it was explained that the certificate was only a copy of a certificate given by the doctor. It was pointed out to the club secretary that he must in future mark the certificate clearly "copy," since otherwise it might lead to serious difficulties. The secretary promised to avoid the appearance of a forged signature in future.

A member wrote in regard to trouble which had arisen out of his marking a certificate with the diagnosis "I.D.K.," intended to indicate "Internal derangement of the knee," but which the approved society suggested must be meant to indicate "I don't know"—in other words, a negative diagnosis. He was advised that the letters "I.D.K." were not an adequate statement of the nature of the patient's ailment, although when compared with previous certificates it would be evident what diagnosis the letters were intended to indicate. A letter was drafted for him to the approved society and the matter was disposed of.

A member arranged for the removal of a very tiresome patient from his list and understood that her name had been removed. She called, however, upon him and insisted upon treatment, which he refused, as a result of which a complaint was made against the member. He was advised by the Society in the matter and the trouble was disposed of.

The Medical Defence Union in a report issued last year also impressed upon its members the need to consult the Union as early as possible in questions arising out of the National Health Insurance Acts. Although it is impossible for them to be represented at an inquiry before the medical service subcommittee, there is a stage earlier than this at which it is even more important that the assistance of a defence union should be secured. In cases of a complaint by an insured patient, the clerk has under the regulations to send on the letter of complaint to the practitioner and invite his comments upon it. Often the reply itself, if judiciously worded, and covering the essential points, will dispose of the matter and obviate the necessity for an inquiry, and it is upon this reply that members are advised to seek the Union's assistance. The solicitors to the Union point out that in appeals they have frequently been greatly handicapped by the injudicious nature of the practitioner's reply, in which he has either made unwise admissions or omitted to deal with essential points, thus providing food for telling cross-examination by the other side.

Prescribing in Manchester

A report presented by the clerk to the Manchester Insurance Committee shows the astonishing increase in the number of insurance prescriptions which pass through the pricing bureau. The increase has been going on in Manchester since 1917 when the number was 857,121, until 1927 when the number was 2,361,713. A drop took place then until 1930; but 1931 shows an increase of 78,704 over 1930, the total being 2,217,145 prescriptions. This gives a yearly average per insured person of 6·3 for 1930, and 6·4 for 1931; the cost per prescription remains the same, at 8·1 pence. For the whole country in 1930 the average was less than 3·7 prescriptions per insured person, little more than one-half the rate for Manchester. It would be interesting to know whether the attendance rate of Manchester doctors on their insured patients is also nearly double. The attendance rate for the whole country is known to be under five and above four, but the rate for Manchester has not been indicated separately. It will be remembered that with the close of 1931 the capitation system of medical benefit had been in operation in Manchester for only four years. Figures presented in this report show that in the last year of attendance basis (1927) the average number of prescriptions per insured person was 7, with an average cost per person of 5s. 3d. at drug tariff value, while on the capitation system the figures have gone down from 6·7 in 1928 to 6·4 in 1931, and from 4s. 10d. in 1928 to 4s. 3d. in 1931. The attendance basis of payment may be held to have been an incentive both to visit and to prescribe, but the maintained figures suggest either the faith of Manchester's doctors in drugs, or the determination of Manchester's insured persons to have them, unless indeed there is an extraordinary amount of ill-health needing medical attention.

A special return has to be furnished to the Ministry of Health upon prescriptions for insulin, serums, and vaccines. Of the vaccines the most costly were autogenous vaccines for 35 patients, costing £80 14s. 8d.; 75 patients received staphylococcal vaccine, costing £38, and 40 patients received anti-rheumatic vaccine, at the cost of £14 16s. 2d.

Medical Records

A leading article in the *Times* of May 16th, containing a suggestion that time, money, and temper are being wasted on medical records of panel patients, has called forth an able reply from Dr. G. C. Anderson, secretary to the Insurance Acts Committee. His letter, which appeared in the *Times* of May 21st, stated concisely and clearly what the obligations of insurance practitioners are, and how the system of records arose. Under present regulations records have to be kept, and a certain part of the capitation fee is always considered to be payment of this work. These records are often of great importance as evidence when charges are brought against a doctor of negligence, or even failure to visit. In all these cases from a memory point of view there is a great advantage to the patient as compared with the doctor, for sometimes a considerable number of weeks elapse before an investigation takes place by the medical service subcommittee, and in this time the complainant has written to the insurance committee, talked it over with relatives, and arrived at a definite impression of his story, which is, of course the dicitis, and as the importance of prompt treatment is recognised (delay in many cases costing the life of the patient), few nights pass without the resources of the hospital being taxed, and the already tired residents called upon to give up their well-earned rest and perform an operation.

I have taken the numbers from the St. Thomas's Hospital reports, from the records published yearly, with the exception of the war years which caused a gap, 1916 to 1920 inclusive. These yearly reports, which were first published in 1869, have followed a uniform plan, and many lessons can be learnt from them. The volumes issued before 1893 must engage our attention, although they are not included in this communication as part of the inquiry, which is intended to give the numbers of cases of recognised "appendicitis" admitted, but is not put forward with the view of showing conclusions other than the probable total of patients for this one hospital.

Many statements have been made as to the prevalence of appendicitis in this country. The publication of a book by Dr. H. P. Hawkins in 1895 on the diseases of the vermiform appendix did much to draw the attention of the profession to the fact that cases usually known before that time as perityphlitis were really cases of disease of the appendix. They were generally of a mild character, presenting an inflammatory mass in the iliac fossa, which rarely required operation, and then only a simple incision with drainage. The cases were always admitted to the medical side and the following are the numbers recorded :—

1873	4	1882	5	1889	18
1874	4	1883	5	1890	28
1878	2	1884	16	1891	24
1879	16	1885	8	1892	20
1880	5	1886	13	1893	28
1881	10	1887	12		

In the years 1869, 1870, 1872. 1880, 1881, 1882, 1883, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892 there were between 1 and 13 cases of peritonitis, the number increasing somewhat as the years passed, but never more than 13 in one year. In the years not mentioned there were no cases of peritonitis having their origin in the appendix.

There was a change in the character of the disease about 1893, as proved by the evidence given in the hospital reports. There was usually a more severe onset, more frequent local suppuration which required incision, also more cases in which the inflammation was not limited to the iliac fossa, and where early operation was necessary. I have arranged the number of cases under consideration in groups.

(A) Patients suffering from appendicitis during the ten years 1894–1903—1075.[1]

These numbers include 48 patients who were admitted and treated on the medical side of St. Thomas's for perityphlitis, but which were undoubtedly appendicitis. On and after the year 1895 the word perityphlitis was no longer used. The gradual increase in admissions is shown as follows in selected years: 1895, 59; 1897, 90; 1899, 141; 1903, 163.

(B) During the years following 1904–1913 the numbers were considerably larger—3872. This increase will be best shown by giving the exact figures for each year :—

1904	258	1908	166	1912	552
1905	435	1909	328	1913	571
1906	332	1910	379		
1907	375	1911	476		

(C) The hospital reports were not issued for the years 1916–20 on account of the war, and the individual case reports are of doubtful value. But for the years 1914–1915 and 1921–1928 they are available and give a total of 3967 for the ten years.

(D) To the total may be added the numbers for 1929, which were 367.

The reports for 1930 have not yet been printed, but Mr. B. R. Sworn, surgical registrar, has kindly sent them to me and they amount to 200, making the total for St. Thomas's in the period 1894 to 1930, excluding the war years, 9481.

It must be remembered that these figures can only be comparatively correct, for in more recent years a new section of "abdominal pain" has appeared. In a majority of these the cause of the pain was "not proven." During one year these cases numbered 80. The admission of urgent cases of appendicitis during the war years was not in any way checked.

Thinking that it might be useful to compare the numbers treated in a recent year at other large hospitals, I made application to Guy's, St. Bartholomew's, and the London, and selected the year 1930 as most convenient to compare with those of St. Thomas's.

I have received replies from Guy's Hospital (392) and St. Bartholomew's (329), for which I thank Mr. C. E. Hughes and Mr. Girling Ball respectively. I hope to be able to add the return from the London Hospital at a later date.

I am, Sir, yours faithfully,

Harley-street, W , June 1st, 1932. W. H. BATTLE.

FORLANINI AND HIS FOLLOWERS

To the Editor of THE LANCET.

SIR,—I have recently heard from Prof. U. Carpi, of Milan, general secretary of the International Society of Pneumothorax Artificialis. He desires that it should be made public in this country that the objects of the society have been altered and that one of them is the raising of a monument in Rome in memory of Carlo Forlanini.

The International Society of Pneumothorax Artificialis was founded in 1912 and strove to diffuse knowledge and facilities about collapse therapy amongst physicians of the world. It also aimed at providing periodically for the sick a list of doctors who practised pneumothorax. Since this method of treatment is now so widely acknowledged and followed in all countries of the world it has been decided to reconstitute this society. All interested physicians are asked to write periodically to the general secretary so that he may be able to publish an up-to-date bibliography of books and articles on collapse therapy in the society's periodical bulletin. He also wants to receive for similar publication communications about pneumothorax instruments and methods of technique, notes from the inventors of these, and brief reports on congresses devoted to collapse therapy.

Prof. Carpi appeals for subscriptions for the monument to Forlanini not only from doctors in this country but also from any patient who has gained health by the method of artificial pneumothorax. I have no doubt therefore that you will allow space for this letter to advertise these laudable objects. Forlanini's pioneer work deserves wide recognition.

Prof. Carpi's address is Via Alberta da Guissano 18, Milan. I am, Sir, yours faithfully,

S. VERE PEARSON.

The Sanatorium, Mundesley, Norfolk, June 2nd, 1932.

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[1] Mr. Cuthbert Wallace and Mr. Percy Sargent : St. Thomas's Hospital Reports, 1904, p. 413.

CORRESPONDENCE

APPENDICITIS

To the Editor of THE LANCET.

SIR,—I was rather astonished by a good deal in Sir James Berry's oration on Fallen Idols, but some of the correspondence which has arisen out of this paper seems to me lamentable; I refer particularly to a letter in THE LANCET of June 4th by Mr. Paterson. Here, if I understand him rightly, he suggests waiting until the appendix has perforated in order to get a clear indication for operation; and even when this catastrophe has occurred he likes to spend several hours giving saline, glucose, and sodium bicarbonate, with the hope that symptoms will subside. I cannot think what grounds he can have for taking this line. The mortality of the operative treatment of acute appendicitis, whether we regard it as acute inflammation or acute obstruction, is nil or as near it as makes no matter, when appendicectomy is performed within a few hours of onset. After the occurrence of such complications as perforation, abscess, &c., the operative mortality is in the neighbourhood of 7 per cent. In the small number of cases mentioned by Sir James Berry expectant treatment had a mortality of 4 per cent., and I should think a larger series would show a mortality of at least 7 per cent. Where, then, is the justification for preaching delay, for that is what Mr. Paterson does? Is it not obvious that the ideal treatment is operation within a few hours of onset, and is it not our business to go on trying to achieve the ideal?

In practice this is difficult, and those who take up Mr. Paterson's attitude make it more so; attempts to encourage this attitude of mind are, in my opinion, most pernicious. If Mr. Paterson had merely said when an appendix had perforated and the trouble had been localised, or general peritonitis had developed, he would wait before advising operation, relying rather on expectant methods because the mortality of operative treatment is as high as that of the other, I think he would have had the support of some surgeons at any rate, but when he advocates deliberately (as he seems to do in his letter) the policy of "wait and see" if such things arise before removing the dangerous focus (and after all who can prophesy what will happen?) I can only hope, as I firmly believe, he will receive no support whatever from right-thinking surgeons.

I agree with Prof. Wilkie that pure acute inflammation of the appendix and pure acute obstruction of it are two different things and of the two the latter is the more immediately dangerous; but they often coexist, and if a patient presents the symptoms and signs of an acute inflammation of the appendix, when first seen, it is utterly unsafe to suppose he has not an obstructive lesion of the organ too, which is therefore unlikely to perforate. It is quite a common thing to find an acutely inflamed and obstructed appendix at the time of operation very near the point of perforation. I am, Sir, yours faithfully,

Leeds, June 4th, 1932. E. R. FLINT.

To the Editor of THE LANCET.

SIR,—May I, as a general practitioner, and therefore one of those upon whom the general public must mainly depend for any reduction in the still appalling mortality from appendicitis, trespass upon your space with a plain-spoken letter? I first was aware of Sir James Berry's lecture entitled Fallen Idols from the excerpts in the lay press. They made, and could only make, one impression on the reader and that was (1) that in the opinion of the lecturer a large number of people died yearly as the result of unjustifiable operative interference, and (2) that if death was to be avoided in appendicitis all that need be done was to await the arrival of a nice abscess, which could be safely opened and drained. When my LANCET arrived later and I read Sir James's article in toto, I found it was innocuous and even contained some sound and sage reflections. It was, in fact, a very suitable lecture with which to open a debate; but in my opinion a dangerous and retrogressive piece of rhetoric when delivered, as it was, on an occasion when it was sure to be broadcasted to the public at large.

Speaking generally the criticisms it contained were entirely destructive and no help was given to young practitioners to enable them to decide when it was safe to wait and when it was dangerous to do so. Personally I do not think any written or spoken word, or even demonstration, will enable a learner to decide. As always, "experience teaches"; but if we are to bring down the mortality of appendicitis to the irreducible minimum of deaths (and deaths in appendicitis need and should only be due to such relatively small and possibly unavoidable causes as anæsthetic deaths, deaths due to embolism, intestinal obstruction, mechanical or paralytic, and so forth) there must be only one teaching, and that the simplest—namely, to operate at once and on suspicion. Pain in the iliac fossa that is accompanied by any degree of tenderness justifies operation. The formation of an abscess ought to be looked upon as a disgrace It is better occasionally to remove an apparently healthy appendix, than to lose one patient's life from taking the risks of delay.

I am prompted to write this letter as a set-off to the eulogistic letters already published. I consider that Sir James Berry has confused and not clarified the situation, and has made things more difficult for the general practitioner in having done something towards biasing the lay mind against operation. If the mortality from appendicitis is to be reduced, it can only be done by clear and simple rules for treatment being enunciated by our teachers. Let us admit frankly that in the earliest stages we do not know in the least what is happening and that there is only one way to find out: Look and see.

I am, Sir, yours faithfully,
LEONARD LEY, M.B., B.Chir. Camb.,
Hon. Surgeon, Great Yarmouth Hospital.
June 4th, 1932.

APPENDICITIS: A FIFTY YEARS' EXPERIENCE IN ST. THOMAS'S HOSPITAL

To the Editor of THE LANCET.

SIR,—In a correspondence in your issue of May 21st, arising out of Sir James Berry's address to the Medical Society of London, a letter from me was included in which I expressed no view on the question of delayed operation in appendicitis, but suggested that an investigation into the increasing incidence of the disease should be undertaken.

In urging on the profession the importance of an inquiry into the causation of appendicitis, it has seemed advisable to give some figures showing the tax which these cases have been on the hospitals of London and the staffs who are called upon to treat them. It is quite unusual in a large general hospital for a day to pass without one operation for appen-in official requirements, and of making the necessary arrangements to meet them.

Every person who takes advantage of this opportunity will be expected to observe the conditions above indicated, and will be required to sign an undertaking to that effect. Inquiries by letter or telephone cannot be answered.

I am, Sir, yours faithfully,
NORMAN C. KING,
Registrar, General Medical Council.
44, Hallam-street, London, W.1, June 4th, 1932.

UNDULANT FEVER

To the Editor of THE LANCET.

SIR,—In view of the interest taken in undulant fever, and the work of Dr. C. P. Beattie and others, recently published in your columns, perhaps the following figures of *Br. abortus* incidence in milks in this area may be of interest. Between 1927 and 1931 I examined for the presence of *abortus* agglutinin the sera of 760 guinea-pigs inoculated in this laboratory with milks (primarily for T.B.). The following are the results:

170 showed *abortus* agglutinin at 1 in 40 or higher = 22·3 %
145 „ „ „ 1 „ 80 „ = 19 %

Roughly therefore 20 per cent. of these animals showed that they had been infected with *Br. abortus*, but as the milks were nearly all mixed samples the positive percentage might actually be higher.

Unfortunately I have but a small number of controls—i.e., animals used for other purposes than milk inoculation. None of these showed a trace of *abortus* agglutinin. Brucella was repeatedly isolated from the glands, spleen, and heart blood of the animals showing *abortus* agglutinin. Milk whey frequently shows the presence of *abortus* agglutinin, but this is no evidence of the actual presence of brucella in such milks. In a small number of whey-positive milks I found just under half (45·4 per cent.) which gave no evidence of infection in the guinea-pigs inoculated.

During the above period I examined 650 human sera for the presence of *abortus* agglutinin. I found it in six cases:

Once 1 in 20 only.	Twice 1 in 80
„ 1 „ 40	„ 1 „ 160

None of these persons was suffering from any disease resembling undulant fever, and in only one case was there any history at all suggestive of a previous infection.

I am, Sir, yours faithfully,
A. H. PRIESTLEY,
Bacteriologist to the Burnley Corporation.
May 31st, 1932.

TREATMENT OF LATE RICKETS AND OSTEOMALACIA

To the Editor of THE LANCET.

SIR,—Dr. D. C. Wilson's finding that certain cases of osteomalacia in Northern India are benefited by the administration of tricalcium phosphate is in line with my experience in the treatment of this disease in the Mayo Hospital, Lahore.

It was found that in some patients (none of whom had ever observed purdah), improvement was very slow or at times non-existent under treatment with vitamins A and D and sunlight, and it was assumed that the diet taken by these individuals did not contain sufficient calcium and/or phosphorus. During the past 18 months or so I have therefore been including calcium glycerophosphate in the treatment of all osteomalacic patients[1] and the results have been beneficial, especially in the resistant cases. The usual daily dose is grs. 30, but sometimes larger amounts, up to grs. 60 daily, are given. Whatever the initial state of the blood chemistry, which varies in different patients, improvement is always associated with a normal serum calcium and a serum inorganic phosphorus as high as that found in healthy infants and young children.

It may be of interest to mention that the daily ultra-violet solar radiation in Lahore in the cold weather was found to be from 3 to 8 units by the acetone-methylene-blue gauge, the average being about 5. In the highlands of Kashmir, a State in which osteomalacia is prevalent, from 8 to 16 units a day were recorded. The occurrence of the disease in non-purdah individuals living in these regions may therefore be, to some extent, the result of a deficiency of calcium and/or phosphorus in the diet.

I am, Sir, yours faithfully,
T. A. HUGHES, M.D., M.R.C.P.,
Professor of Clinical Medicine, Medical College, Lahore.
Bexhill, May 30th, 1932.

FREE TREATMENT AT VENEREAL CLINICS

To the Editor of THE LANCET.

SIR,—With a practical experience of over 20 years in venereal diseases, I heartily endorse all that Dr. Wansey Bayly asserts in his letter to you. It is time that some committee should be set up to review the whole position. The very object for which the Government voted large sums of money has been defeated. All and sundry flock to the clinics without fear or favour. Modern youths have no knowledge of the deterrents to promiscuous intercourse that their fathers realised, with the result that instead of diminishing the incidence of venereal diseases is rising. As Dr. Bayly states, the venereal specialist is facing ruin—and for whose benefit?

I am, Sir, yours faithfully,
London, W., June 4th, 1932. M. W. BROWDY.

To the Editor of THE LANCET.

SIR,—The adoption of the points of view expressed in the letter of Dr. Wansey Bayly would undoubtedly lead to anti-social interference. If there is a group of infectious diseases whose ravages are not limited to any one section of the community, that group, beyond question, is the venereal. It is true that venereal disease is preventable, but adequate prophylactic teaching is not yet carried out—not even to the extent of instruction of students of medicine. Therefore, until this education is widely instituted, venereal disease cannot be said to be "voluntarily" acquired.

Dr. Bayly confuses two aspects of medicine: (1) the treatment of disease; (2) the income of doctors who make a living treating it. With regard to the first, it is in the interests of the nation that venereal disease be wiped out; and for this simple human work treatment should be free. The second aspect can lead to alarming implications. For, carrying this to its logical conclusion, we come to the unavoidable position that it is in the interest of venereal specialists that venereal disease should not be exterminated. I do not suggest that doctors are guilty of wishing for this state of affairs, but it seems to me that we should resist any attempt to limit

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[1] Hughes, T. A., Shrivastava, D. L., and Malik, K. S.: Ind. Jour. Med. Res., 1931, xix., 593.

DIPHTHERIA IMMUNISATION IN INFANTS

To the Editor of THE LANCET.

SIR,—In an interesting annotation in your issue of June 4th (p. 1210) you discuss the above important question. As regards urban districts, where about 85 per cent. of children are born with maternal diphtheria antitoxin in their blood, the conclusions arrived at in the annotation appear sound. I would point out, however, that in rural districts 70 per cent. or more of the adults may have positive Schick reactions. This means about the same proportion of infants are born with no antitoxic immunity to diphtheria. In the rural state of Kansas, for example, a most successful anti-diphtheria campaign, among the children of 1 to 14 years of age, was followed by an actual rise in the morbidity and case-mortality for diphtheria among the unprotected infants under a year old. In such districts it would appear very necessary to protect infants at birth. Two methods of procedure suggest themselves:—

(*a*) Schick testing the mothers, and immediately immunising the babies of those who have positive reactions. Schick testing the babies themselves is probably less reliable, because the infants' skin is often relatively insensitive to bacterial toxins, and may fail to react to the ordinary Schick dose of diphtheria toxin, even when there is no antitoxin in the blood. The infants, whose mothers are Schick immune, are actively immunised as usual, after they have lost their maternal diphtheria antitoxin.

(*b*) Inoculating the mothers with diphtheria toxoid during their pregnancy. The maternal diphtheria antitoxin, thus stimulated, will pass to the fœtus. Subsequently the babies themselves are actively immunised after they have been born 12 months or so.

The latter method is analogous to that said to have been used successfully in preventing umbilical tetanus, common in certain tropical regions. In this campaign the pregnant women were inoculated with tetanus toxoid. I am, Sir, yours faithfully,

SHELDON F. DUDLEY.

R.N. Medical School, Greenwich, S.E., June 4th, 1932.

AVERTIN NARCOSIS

To the Editor of THE LANCET.

SIR,—The statement made by Dr. Kennedy in his communication on the Counteraction of Avertin Narcosis (THE LANCET, May 28, p. 1143) that lavage of the rectum is of no avail needs to be modified. It is true that the absorption of avertin is extremely quick—this is one of its many advantages—but I have noticed that on those occasions on which the solution has been returned even as late as half-an-hour after injection, or on which it has been deliberately syphoned off, for example, before the performance of a plastic operation on the perineum, there has been a definite diminution in the depth of narcosis. In one case of extreme overdose (10 times) reported to me, which occurred owing to a little difficulty with those "dashed dots," washing out the rectum was effective, and the operation was completed without mishap or complication.

Raginsky and Wesley Bourne have published the results of experiments on dogs which show that ephedrine interrupts or considerably shortens avertin anæsthesia (*Jour. Pharm. and Exper. Therap.*, 1931, xliii., 209). They have demonstrated also the value of ephedrine clinically in overcoming profound avertin anæsthesia. Dr. Kennedy's communication draws attention to another line of defence. The necessity for the use of either of these drugs should be extremely rare, for by restricting the use of morphia to suitable cases and by individual dosage the risk of overdose should be abolished.

I am, Sir, yours faithfully,

FRANCIS E. SHIPWAY,

York-terrace, Regent's Park, N.W., June 6th, 1932.

HÆMORRHAGIC PURPURA FOLLOWING SCARLET FEVER

To the Editor of THE LANCET.

SIR,—It has been brought to our notice that some who have seen our paper on Hæmorrhagic Purpura following Scarlet Fever in THE LANCET of March 5th (p. 509) have read into it a meaning that was neither intended nor implied—namely, that some tendency must be assumed to exist in the family that might conceivably affect other members.

In this family there has been hitherto no hæmorrhagic or purpuric disease within memory, and no disease in earlier generations could have been overlooked, for detailed knowledge is available of most of its members as far back as the early years of the eighteenth century.

Out of 18 references to other cases quoted in our paper, in 11 the possibility of hereditary and familial abnormalities was not thought important enough to mention. In seven others the family history was negative to any history of bleeding, purpura, or tendency thereto. In the paper reported by J. W. Miller (THE LANCET, 1905, i., 929) it is stated that two other brothers who developed scarlet fever at the same time as the patient who suffered from purpura had since recovered from the disease without any similar complication.

It is therefore clear that while in our case two members of the same family were affected, there is no logical ground for assuming that there is any hereditary or familial tendency towards this condition so far as previously reported cases are concerned.

We are, Sir, yours faithfully,

F. G. HOBSON,
A. G. GIBSON.

Oxford, May 31st, 1932.

THE NEW PHARMACOPŒIA

To the Editor of THE LANCET.

SIR,—The new issue of the British Pharmacopœia (1932) will be published on Sept. 30th, and I am instructed to say that the General Medical Council wholly reserve their copyright in the new work, and that nothing in the nature of substantial extracts from it must be published without the Council's express sanction. A memorandum relating to this matter in detail can be supplied on application. At the same time no objection will be taken to such reasonable reference to the facts and figures therein set forth as may be properly made for purposes of criticism, review, and summary, or of study and research, but no information of any kind derived from the new issue may be published in book form before Sept. 30th.

Advance copies of the text of the Pharmacopœia will be accessible on July 4th, at this office, and at 12, Queen-street, Edinburgh, and 35, Dawson-street, Dublin, for the inspection of the public, from 10 A.M. to 1 P.M. and from 2 P.M. to 4 P.M. daily excluding Saturdays, in order to give to manufacturers, pharmacists, and others interested an opportunity of ascertaining the changes that are about to be made

PUBLIC HEALTH SERVICES

SCOTLAND IN 1931

THE third annual report of the Department of Health for Scotland follows the form laid down by the Board of Health in 1924. Indeed, the series from then onwards presents material for a valuable study of the evolution of health functions in a small kingdom.

The year 1931 was dominated by unemployment and the need for economy. These, in association with the extensive reorganisation involved in the new Local Government Act, made the period a difficult one; but the report shows how the work has gone on smoothly and systematically.

Housing has made progress, although the year's output of completed houses was only 10,604 as against the record of 18,240 of 1929. But there were at the end of the year 20,196 houses under construction or approved, and 1932 promises well. The falling off was very natural, since local authorities get "saturated" from time to time and changes of methods and governments tend to interrupt progress. But the Department clearly means to press the new housing and slum-clearing legislation and the velocity of production will probably be soon restored. The number of houses provided, with State assistance, between 1919 and 1931 was 128,007; and by private enterprise without subsidy 14,262. The total is 142,269.

Maternal mortality shows a drop from 6·9 per 1000 births to 5·9. Infant mortality, which stood at 129·4 per 1000 births in 1896–1900, was 85·5 in 1926–30. But these figures are still disappointing. Puerperal sepsis and puerperal pyrexia show signs of being better notified: 1104 and 1053 cases respectively. Of the 1177 puerperal fever and 906 of pyrexia notified in 1930, 863 and 358 respectively were removed to hospital. Greater advantage was taken of the assistance provided by local authorities in such cases—consultants, bacteriological examinations, special nursing, and hospital-treatment. Postnatal applications at the welfare centres by mothers were mainly due to insufficiency of breast milk and to the child being under weight. "An examination of the applications granted free in Glasgow during 1930 showed that more than one-half of the applicants were in receipt of unemployment benefit."

Health supervision of the pre-school-children (1–5) shows much improvement, 71,048 being visited on an average four times each. But the total number of children in this group is about 340,000. One striking fact emerges as to the school group (5–15). The Glasgow report (reviewed below) shows that there is an increase in the heights and weights of boys and girls in each age-group according to the size of the house they live in. This confirms the report issued by the Scottish Education Department in 1907 on the heights and weights of 72,857 Glasgow children.[1] But there is a new fact about the ages 9 and 13; for in 1931 the average heights and weights of the children at those ages from one-apartment houses exceeded those of the children from two- and three-apartment houses in 1907. "That school entrants do not show quite so much relative improvement suggests the beneficial influence of modern school life."

A fresh statistical analysis of tuberculosis has been made as a first step in the investigation of the geographical incidence of tuberculosis in Scotland, with correction for age constitution of the area populations. The facts presented deserve further elaboration.

A feature of this year's report is the account of hospital reorganisation. Illustrations are given of the successful efforts to bring official and voluntary hospitals into coöperative unity. Another feature is the large results of the administration of the Highlands and Islands Medical Service Fund. This is working a transformation on the medical and nursing services. The most striking departure has been taken by the county of Caithness.

> In Caithness the county council "acts as the financial authority for the surgical arrangements, while the surgeon performs all the surgical duties required in the county, in both the voluntary and the statutory hospitals. When called upon by general practitioners, he also acts as surgical consultant in the houses of the people. It has been arranged that the department will repay the council one-half of the charges incurred under the financial guarantee after deduction of sums recovered as fees for the surgeon's services."

These arrangements are interesting in themselves; the following, however, is, so far as we are aware, unique in this country. When consultant surgeons were first appointed (1924) in Shetland and Lewis, it was felt that an effort should be made to conserve the "placings" of young surgeons sent to those outposts; but, at that date, the difficulties were too great and there was no experience of the new departure. But Caithness county, along with Aberdeen, has solved the problem.

> "With the concurrence of the University Court and the managers of Aberdeen Royal Infirmary, the professor of surgery at Aberdeen University nominated a surgeon for a limited period of duty in Caithness, whose prospects in relation to the University and the Infirmary will not be diminished by reason of his service in Caithness. If, as vacancies occur elsewhere, surgeons could be appointed in this way so as to retain their status at medical teaching centres, anxiety as to the future of this specialist service in Highland counties would disappear. The sympathetic consideration given to the problem by the Court of Aberdeen University and the managers of Aberdeen Royal Infirmary, which has produced the practical scheme under which surgical services are now being provided in Caithness, is deeply appreciated by the Department."

And we may add that the Department is to be congratulated on a new departure of no little importance.

SCHOOL MEDICAL SERVICE

—	No. on roll.	Average attendance	Routine inspection.	Special examinations and re-inspections	Percentage of defects.
Derbyshire .	75,073	—*	24,417	14,440	18·3
Eastbourne.	5,039	4,525	1,626	6,326	9·22
Glasgow ..	184,859	163,546	53,565	41,674	31·0

* Not given.

Derbyshire

THERE are apparently no special schools of any kind in Derbyshire (except the excellent hospital school), no nursery schools, and no open-air schools, nor have comprehensive arrangements been made for playground classes, school journeys, or open-air classes in elementary schools. The County Education Committee has offered assistance to 308 needy children to attend the many camps organised by the Voluntary Camping Association. Fourteen of the 377 elementary schools are of the famous Derbyshire open-air type, but they are not open-air schools in the full meaning of the term. To what extent these defects could be rectified even at the present time needs careful consideration. Dr. W. M. Ash says that the economic position has made it impossible to contemplate any marked extension in the service.

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[1] H.M. Stationery Office. Cmd. 3637.

the present services for the treatment of venereal disease. On the contrary, we should extend them, and really make an effort to attack venereal diseases scientifically, that is, by propagating widespread information of prophylaxis for these social plagues. The abolition of venereal disease by planned measures on preventive lines should afford us pleasure which would adequately compensate for the sorrowful picture Dr. Bayly draws for us of. the venereal specialist seeing ruin staring him in the face.

I am, Sir, yours faithfully,

FRANCIS LOUIS.

St. Peter's (Whitechapel) Hospital, E., June 5th, 1932.

THE SHUTTLEWORTH SAMARITAN FUND

To the Editor of THE LANCET.

SIR,—May we ask for the hospitality of your columns in order to make known, to all who have the welfare of the mentally defective at heart, that a fund is being raised to form a memorial to the work of the late Dr. G. E. Shuttleworth?

It is now nearly four years since Dr. Shuttleworth passed away, after a long life devoted to the welfare of the mentally defective, in which cause he was a pioneer. It is proposed that the memorial should take the form of a Samaritan Fund, named after Dr. Shuttleworth, which should be available to help better-class people to place their children or relatives in appropriate homes for care or training. Families of this class are prevented by many considerations from applying for aid to public assistance authorities, nor, in their case, even when such help is sought, is it easily obtainable. No other fund of the kind exists, although in many cases under post-war conditions, such help as it would offer has become essential. It is felt that this would be a particularly happy way in which to commemorate the work of one who was ever ready, with a singular generosity, to give his advice and aid to all who were in need.

Donations of £115 have already been received, and it is thought that many will be glad to have this opportunity to show their appreciation of Dr. Shuttleworth's great and unselfish services. Subscriptions should be sent to the treasurer, the Shuttleworth Samaritan Fund, 72, Denison House, 296, Vauxhall Bridge-road, S.W.1, or direct to the Shuttleworth Samaritan Fund, Martin's Bank, 68, Lombard-street, E.C.3.

We are, Sir, yours faithfully,

(Signed) G. A. AUDEN,
F. G. CROOKSHANK,
T. N. KELYNACK,
R. LANGDON-DOWN,
W. A. POTTS.

June 7th, 1932.

THE KING'S COLLEGE HOSPITAL SCHEME

To the Editor of THE LANCET.

SIR,—As a practitioner who has to earn his livelihood in the area served by King's College Hospital, I am entirely in sympathy with the remarks of THE LANCET (May 28th, p. 1172) on the scheme of contract practice inaugurated by this hospital for persons of unlimited means. In its initial stages the scheme took no notice at all of the general practitioner. Anyone with an income of thousands a year taken with a suitable pain in his abdomen could go to King's on his own account and because he had paid £11 per year to the hospital his appendix would be removed in a paying ward without charge by the hospital and at a reduced fee by the surgeon, without his ordinary medical attendant even hearing of the matter unless the patient should come to him later with a ventral hernia. Now, however, I observe an amendment to the rules that runs: "Normally patients will only be admitted on the advice of their own doctor." Not a very strong safeguard, nor really of much help to the practitioner. It does seem a pity that young consultants should not stick to consultant work, and I am convinced that the only effective method of dealing with the situation would be to notify all local medical organisations of the position, and for them to advise that no cases be sent to any consultant who is prepared to act in the way suggested.

I am, Sir, yours faithfully,

R. GODWIN CHASE, M.B., B.Chir.Camb.

June 6th, 1932.

CHLOROFORM AND THE HEART

To the Editor of THE LANCET.

SIR,—Might I suggest that Dr. I. G. W. Hill should examine electrocardiographically patients under light chloroform anæsthesia to whom a preliminary dose of atropine gr. 1/60 has been given one hour before. I have been giving chloroform to patients for the last 24 years at the Manchester Skin Hospital. These patients have, practically speaking, never been deeply anæsthetised. The majority of them move when the operation commences. During that time I have seen three cases of early chloroform collapse, that is pallor, sweating, dilated pupils, respiration so shallow as to be doubtfully perceptible, pulse so feeble as to be doubtfully palpable. Fortunately they all recovered. The interesting point is that none of these three had had a preliminary dose of atropine. I found this out on inquiry after. In each case it had been forgotten. It has been my routine practice to give a preliminary dose of atropine to all my patients whether they were to receive ether or chloroform, since 1910. From the clinical standpoint I have seen no evidence which would lead me to suppose that ventricular fibrillation is ever a cause of death in patients under light chloroform anæsthesia if they have had a preliminary dose of atropine. Actually, in practice I use morphia as well as atropine, but I have always supposed that it was the atropine that safeguarded the heart from vagus inhibition, which latter is, in my opinion, the precursor of ventricular fibrillation.

I am, Sir, yours faithfully,

E. FALKNER HILL,
Lecturer in Anæsthetics in the University of Manchester.

Manchester, June 6th, 1932.

GLASGOW'S NEW DENTAL HOSPITAL.—Last week Sir Ian Colquhoun, Lord High Commissioner of the Church of Scotland, paid a semi-state visit to Glasgow as representing the Prince of Wales to open a new dental hospital in Renfrew-street. This is the first time in nearly 300 years that a Lord High Commissioner, in that capacity, has visited Glasgow. The hospital, which includes a training school, is said to be "the most modernly equipped dental hospital in Britain." There are 50 dental chairs with provision for a further 22, and eight children's chairs. In addition to an X ray department there is a pathological and histological laboratory *with accommodation* for 50 students. A large theatre for general anæsthetics has recovery cubicles for men and women. The lecture theatre has sitting and writing accommodation for 200 students; two smaller lecture rooms will each hold 50 students, and there is a library and museum. The cost has been £65,000, of which £27,000 has yet to be raised.

OBITUARY

REMINGTON HOBBS, M.D. Brux., M.R.C.P.Lond.

Dr. Albert Remington Hobbs, who had been medical superintendent of St. Mary Abbot's Hospital, Kensington, for some 15 years, died on May 30th after a serious operation. He was at work less than a fortnight before his death.

Remington Hobbs was trained at St. Mary's Hospital, whence he qualified M.R.C.S., L.R.C.P. in 1901, becoming M.R.C.P. in 1930. He took the M.D. Brux. with honours in 1908. After qualifying he held appointments at St. Mary's Hospital as house surgeon, house physician, resident obstetric officer, casualty officer, and resident anæsthetist. He worked also for a time as assistant demonstrator of pathology and as ophthalmic house surgeon at St. Mary's, and as clinical assistant to St. Peter's Hospital and to the Paddington Green Children's Hospital and the Samaritain Free Hospital. Dr. Hobbs had thus gained exceptionally wide experience before his first administrative appointment as assistant medical superintendent to the Paddington Infirmary. He held this post until 1907 when he started general practice in Golders Green. On the outbreak of the war he left his practice at short notice to serve in the Army. He was, however, soon invalided out, and held the post of medical superintendent at Bethnal Green Infirmary before being appointed in the same capacity to St. Mary Abbot's Hospital, Kensington, where he became well known especially in connexion with the treatment of puerperal sepsis. He first became interested in the subject 13 years ago, and eventually worked out a line of treatment which proved extremely successful in his hands. This was based on his conviction that puerperal sepsis is, for the most part, an autogenous infection superadded to imperfect drainage. He showed that latent bacilluria is common in pregnant women, that puerperal sepsis can exist without pyrexia, that after-pains are abnormal and significant of sepsis, and finally, that with perfect drainage brought about by intra-uterine injections of glycerin many cases are cured. He believed that in many of the more serious streptococcal infections early uterine drainage would prevent the spread of infection and a general septicæmia. So enthusiastic was he in this special work that he started a clinic for teaching his methods, and during the last ten years medical men from almost every country in the world have attended his demonstrations. His methods were not at first generally accepted, but his enthusiasm remained undiminished and it was a source of great satisfaction to him in recent years to find a growing interest among gynæcologists in his work. He rejoiced at his appointment as Hunterian professor of the Royal College of Surgeons for 1932, as giving him an opportunity to give further publicity to his methods. Three days after his fatal illness began he was awarded the Triennial Gold Medal of the West London Medico-Chirurgical Society for distinguished work, and the news of this honour greatly comforted him during his last few days of life. In addition to his official appointment at St. Mary Abbot's Hospital, he was consulting gynæcologist to the Royal Borough of Kensington. This appointment was welcomed by the medical profession in the district, for he had their entire confidence.

ALBERT REMINGTON HOBBS.

A colleague writes: "Remington Hobbs was not only a medical man keenly interested in the specialty he had made his own, but also a splendid sportsman. He and his brother (E. C. Hobbs) were for some time the first wicket batsmen for St. Mary's Hospital, and Remington made a fine century against St. Thomas's when St. Mary's won the Hospital Cup in 1899. With his brother he put on 104 runs for the first wicket when playing for St. Mary's against Dr. W. G. Grace's London County Eleven in 1900. Afterwards he played for the Middlesex Second Eleven and for some years for Buckinghamshire, and he was playing in London club cricket and making good scores until two years ago. Hobbs was a lovable person and a delightful companion. He was so good natured, so kindly, that it was difficult to differ from him. His home life was particularly happy, and much sympathy will be felt for his widow and his two boys."

Dr. Leonard Colebrook writes: "It says much for his enthusiasm and industry that Remington Hobbs, while carrying all the cares of a large poor-law infirmary, was able to make a name for himself as the advocate of a particular form of treatment. Instillation of glycerin into the infected uterus had occasionally been tried in the past, but had not attracted special attention. Indeed, at the time (1920–23) when Hobbs became interested in the puerperal infections almost every remedy had become largely discredited. Inspection of the genital tract to determine what was the condition of the cervix and vaginal vault was seldom made, and if there was obstruction to the outflow of the discharge through the cervical canal, it was scarcely ever recognised. To Remington Hobbs, more than to any other man, is due the changed attitude with regard to this condition. He recognised that drainage, both of the uterine cavity and of the infected tissues, was a vitally important factor in recovery, and that the application of glycerin was likely to facilitate such drainage. Having satisfied himself that dramatic improvement in the patient's condition did frequently follow the instillation of glycerin he set himself to perfect the technique of the operation so that it could be carried out, if necessary, several times a day without undue pain or discomfort for the patient. It is not too much to say that he set up a new standard of skill (and of gentleness) in the examination and treatment of the patient with a postnatal infection. Not content with the improved results in the cases of established infection admitted to his hospital, he worked unceasingly by the same methods to control the mild pyrexias in his own maternity department—and also to bring the success of the 'glycerin treatment' to the notice of others.

The dental attendances have greatly increased and the staff, working at full strength, has just been able to cope with the work. Progress is largely due to the increasing interest taken by parents in conservative dentistry. In certain areas statistics showed that where the percentage of consents for conservative dental work was high, the percentage of cases requiring a general anæsthetic was low, and vice versa, and here, as in many other areas maintaining an efficient dental service, the interference with routine caused by the casual patient was much felt. A striking illustration of the importance of oral hygiene is given: Out of 540 children referred by assistant school medical officers for dental treatment prior to tonsillectomy or prior to a period of observation for enlarged tonsils, 444 had previously refused dental treatment or were school entrants. This finding reinforces Dr. Ash's plea that whenever possible conservative methods, including dental treatment, should be tried before tonsillectomy is carried out.

Dr. T. E. A. Carr, the oculist, points out that while tests of refraction and the provision of glasses increase the patient's comfort and efficiency, the treatment of conditions such as corneal ulcers and early cataracts is even more vital since it may prevent actual blindness. The early treatment of squint is also of paramount importance in the preservation of vision. Of the three lines of attack, (1) correction of refractive errors, (2) orthoptic exercises, and (3) operation, orthoptic exercises are difficult and costly to provide, and yet for the real cure of squint the training of the latent fusion faculty is fundamental. The orthopædic scheme, including the special hospital at Bretby, is functioning well. A full report on postural defects by Dr. W. J. Pierce has had to be condensed; he points out the insidious onset of postural deformities, the ease with which most of them can be corrected by treatment in the early stages, and the difficulties of treatment if it is postponed until deformity has become marked.

The principle of early detection and correct treatment that is the keynote of the report is exemplified in Dr. H. S. Bryan's account of the work of the Child Guidance Clinic.

Eastbourne

Only one notable development of the school medical service at Eastbourne is recorded by Dr. W. G. Willoughby, and that is the increase of sessions for dental treatment from two to six half-days weekly. In other matters there has been an arrest; for example, the replacement of the old buildings at the open-air school has been postponed owing to financial stringency, though the main classroom and the rest shed badly need attention. This school, like the special mental defectives school, was a temporary building, adapted from army huts in 1920, an additional up-to-date classroom being added in 1929. It has proved a helpful adjunct to the school medical service, especially with children suffering from general debility and malnutrition; a few cases such as those of "observation mentality" or "post-rheumatic fever" would seem less likely to benefit from the special conditions provided in this school. The mental defectives' school continues to be useful, though not really fitted for its purpose. It is satisfactory to learn that for the first time since medical inspection was instituted no case of uncleanliness was found at the routine inspections; at the surprise inspections by the nurses 497 children were found to be unclean. No account is given of the progress of the health propaganda described in previous reports, nor is there any mention of the special class for stammerers that was formerly described by Dr. Coghill. The report of the organiser of physical training has not been printed. Dr. Willoughby's report for 1931 is thus less complete than was its predecessor.

Glasgow

The arrangement of this report does not take exactly the same form as those of English areas, and the figure for defects is probably not comparable. It is written by Dr. G. Arbuckle Brown with an introduction by Dr. A. S. M. Macgregor, and deals with the work done during the first complete year since the transfer of functions to the corporation under the Local Government (Scotland) Act of 1929. The effect of the coördination of the education health service with the other medical services of the corporation is held to be profound and beneficent. One result is that the medical supervision of the child from birth till the end of school life becomes the function of a unified service. Other results include:

> "The transfer of operations for tonsils and adenoids to the Western District Hospital; the more expeditous admission of necessitous cases for operations and medical treatment to the general hospitals; the surgical treatment of marked orthopædic deformities not formerly provided for, and the extension of all branches of orthopædic treatment and medical gymnastics; the supervision and control of infectious disease in schools by means of definite arrangements with the divisional medical officers of the health department; the housing of school treatment clinics in child welfare centres; the treatment in school clinics of minor ailments of children referred by the child welfare service; coördination with the clinic for the blind under the Blind Persons Act; coördination with the mental clinic for the supervision of mentally defective children; and in general, a closer, more intimate and effective linking up of the various medical services necessary for the welfare and supervision of child life in Glasgow."

The senior assistant medical officers of the educatio service, in coöperation with the sanitary inspector of each area, have begun a detailed and fruitfu survey of the sanitary conditions of the schools, an a still more interesting feature of the new system ha been the plan of inquiries embracing both the schoo and the home aspects of child life. One of thes inquiries affords exact statistics of the physique o the children at various ages during various periods divided into groups according to whether the familie occupy houses with one, two, three, or four rooms The arrangements for one sex and age—i.e., girl of 13—are set out in the following table:—

Age.	Year.	Heights.				Weights.			
		Number of apartments.				Number of apartment			
		1.	2.	3.	4.	1.	2.	3.	4.
13	1907	53·9	54·7	55·6	56·4	71·9	73·9	76·3	79·3
	1924	55·2	51·6	56·5	57·1	76·3	76·8	80·0	80·8
	1931	56·0	56·8	57·5	58·5	79·5	82·0	84·3	88·3

The degree of improvement which has taken plac in general is encouraging; it is of interest to not that the average heights and weights of the childre from one-apartment houses in 1931 are higher tha those of the children from the two- or three-apartmen houses in 1907. In the 5-year age-group the childre from the one-apartment houses in 1931 were talle than those from the houses of two apartments i 1907, but fell short in average weight. These observa tions are held to indicate that the improvement i height and weight is more marked after some year of school life.

Another inquiry shows the fall in prevalenc of rickets, the war years being omitted, whic in the three years ending 1914 was recorded a 9·0 per cent. of the school population, in th three years ending 1924 as 5·7 per cent., in the thre years ending 1929 as 4·2 per cent., and in 193 as only 3·0 per cent. Another set of statistics sho the percentages of school-children living in houses o one, two, three, four, or five or more rooms. Com parisons with previous years show that housin conditions in 1931 are much better than they wer 20 years ago, except in the single-roomed hous where they appear to be worse. Lastly, a record o the milk consumed daily per head has been compiled This works out to an average of 0·36 pints for childre in the poorest schools, 0·47 pints for those i "medium" schools, and 0·62 pints for those in th better-class schools. In 60 families no fresh mil was used.

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"To many his single-minded enthusiasm and the orderly—almost oratorical—presentation of his thesis carried conviction. Others asked for statistical proof of the success of the method. Such proof could, however, scarcely be expected. The group of puerperal infections is too heterogeneous, and the tendency to spontaneous cure in the less severe cases is too high to admit of statistical treatment. Probably the careful study by H. J. Phillips, of Manchester (presented to the Section of Obstetrics of the Royal Society of Medicine in 1926), comes nearer than anything else to statistical proof of the value of the method. As so often in medicine, we have to proceed in the absence of complete proof, and the safest way is to be guided by such principles as appear to have a sound basis. To those who are familiar with the filthy condition of the infected uterine cavity post mortem (comparable only to the filthy wounds seen in the earlier days of the Great War), and are familiar also with the convincing experiments of Sir Almroth Wright on the importance of maintaining a flow of 'uncorrupted' lymph through infected tissues, there can be little doubt that the frequent instillation of a lymphagogue such as glycerin into the infected uterus must frequently be beneficial. While we may hesitate to go all the way with Hobbs in the interpretation of his results, most of those who have had experience of a number of cases treated by his method are well satisfied of its advantages. Personally, as one who has watched the march of events in connexion with puerperal fever over a number of years, I venture to assert that Hobbs's work has contributed more than anything else towards progress in the control of these puerperal infections."

ANDREW BOUTFLOWER, M.R.C.S. Eng.

Dr. Boutflower, who died at his home at Kersal on June 1st, was for many years senior surgeon of the Salford Royal Hospital. He was born at Salford in 1845, and was educated in Dublin and Manchester. On qualification as M.R.C.S. and L.S.A. in 1868 he became house surgeon at the Manchester Royal Infirmary. His father, John Boutflower, F.R.C.S., who had been surgeon to Salford Royal Hospital for 44 years, resigned in 1870, and the son took his place, remaining on the active staff from 1871 to 1911 when the institution was enlarged. He was also honorary surgeon to the Chetham Hospital, visiting surgeon to H.M. Prison, Strangeways, and medical visitor for lunatics for the county magistrates. He had a large practice in Salford and the neighbourhood. His chief outside interest centred in the Manchester Cathedral, of which he was at one time church warden. The name of Boutflower carries one a long way back in the medical history of Salford. John Boutflower lived from 1798 to 1889, and father and son between them served the Royal Hospital for 84 years.

CUTHBERT CHRISTY, M.B. Edin., F.R.G.S.

Dr. Cuthbert Christy, who died in the Belgian Congo on May 29th, was born at Chelmsford, educated at Oliver's Mount School, Scarborough, and went on to Edinburgh to study medicine, graduating in 1892. For three years he travelled in South and Central America, then joined the West African frontier force in Northern Nigeria, and later assisted Haffkine in his Plague Laboratory at Parel, Bombay. A short period as civil surgeon in lowland India was followed by extensive travel in the northern mountains, and in 1902 his rich experience and qualification led to his appointment as a member of the first Sleeping Sickness Commission in Uganda, and later of an expedition sent out to the same region by the Liverpool School of Tropical Medicine. On returning he lectured at this school for three years, followed by a further period of travel in East Africa and Uganda. During the war Dr. Christy became adviser for malaria in the East Africa expeditionary force with charge of the malaria hospital at Dar-es-Salaam. After the war he continued his expeditions in Central Africa, collecting specimens of rare animals and birds. Recently he had been serving on a Commission appointed by the League of Nations to inquire into the existence of slavery in Liberia. He was a great traveller, naturalist, and humanitarian.

MARCUS SINCLAIR PATERSON, M.D. Durh.,

LATE MEDICAL SUPERINTENDENT OF COLINDALE HOSPITAL.

We regret to announce the death on June 1st, in his 62nd year, of Dr. Marcus Paterson, who will long be remembered for his pioneer work on the institutional treatment of tuberculosis.

DR. MARCUS PATERSON.

[Photograph by Elliott & Fry

Marcus Sinclair Paterson was born in Scotland and on leaving school spent an apprenticeship of two years in the shipyards of Messrs. Inglis and Co. at Glasgow. Deciding then upon a medical career he entered as a student at St. Mary's Hospital and qualified as M.R.C.S., L.R.C.P. in 1894, and after further work at Newcastle Infirmary graduated M.B., B.S. Durh. in 1895. He then spent three years as a ship's doctor in the service of the P. and O., on leaving which he became house physician at the East London Hospital for Children. Here he worked in particular under the late Dr. Eustace Smith, to whose clinical judgment and sound methods he always attributed a great influence on his own life work. That work he may be said to have started when he was appointed resident medical officer at Brompton Hospital for Consumption. He threw himself into the conduct of the institution with zeal, and made a great impression upon the staff by the thoroughness of his methods, so much so that Sir James Kingston Fowler, with whom he came into close contact, said of him "if there were more Marcus Patersons there would be fewer cases of tuberculosis."

At Brompton he showed his powers of organisation to such effect that the authorities had no hesitation in appointing him as medical superintendent at the Frimley Sanatorium when that institution was opened. Their prompt choice was fully justified, for Paterson's gifts found full scope there. He became a prominent member of the small group who established the lines of sanatorium treatment of tuberculosis in this country. While the original inspiration of the methods for which he became so well known can be traced to the teaching of Otto Walther of Nordrach, Paterson's experience, acquired in the yards and drawing office of one of the largest Tyne-side shipbuilding firms, enabled him to view the problems of tuberculosis from the angle of the workmen. Like Walther devoid of deep scientific knowledge, he had a great fund of common sense and a capacity for seeing essentials. Walther relied upon graduated walking as best qualified to bring the convalescent tuberculous subject into the physical health necessary for return to work. Paterson, in association with Arthur Latham and Conyers Inman, substituted for walking a system of graduated exercises. He recognised that the working man would have a much better chance of obtaining and retaining his occupation if he could be discharged from a sanatorium with a proven capacity for performing his ordinary tasks, and he and his collaborators at Brompton were able to bring forcible arguments forward in proof that graduated labour was as serviceable as walking in the treatment of the convalescing subject. Paterson was fortunate to be linked in this work with Inman, who was an accomplished and enthusiastic bacteriologist, and who demonstrated by immunity reactions the beneficent effects of controlled auto-inoculation. In one form or another the principles thus laid down were adopted in all British sanatoriums which provided for the industrial classes. It required courage and a high conviction of the soundness of both theory and practice to induce patients with lung disease, who were taught to rest and to avoid any strain, to engage in physical labour, however light, and it is there that Paterson's personal qualities and past experience stood him in such good stead. He was loyally supported by the patients at Frimley who willingly coöperated in the methods—indeed Latham once testified that the difficulty was to restrain them in their desire to proceed quickly up the grades instituted. The actual pattern of labour which Paterson first laid down has since been modified, its seven grades having been reduced to four and their severity mitigated; but the workshops and industrial settlements of the present day are its lineal descendants. A description of the actual methods as originally laid down will be found in his monograph "Auto-inoculation in Pulmonary Tuberculosis" and briefly in the "System of Treatment" by Latham and English.

His experience in the engineering shops and on board ship had convinced him that to be out of work was worse than to be suffering from tuberculosis, and that to keep the quiescent case healthy on discharge from the sanatorium it was essential that he should obtain remunerative work, and, if possible, the work to which he was accustomed. The usual recommendation that a town worker should attempt to obtain employment on the land or as a seaman, because of the open-air environment, he contended to be entirely wrong, for the labour would not necessarily be lighter while inexperience would tend to make it harder. Hence with vague recommendations that the tuberculous subject should "go abroad" he had no patience, pointing out both how difficult it must be to secure with certainty any work abroad, and how much easier it is to starve anywhere else than in England.

The excellence of Paterson's work was recognised at the International Congress of Tuberculosis at Washington in 1908 where the first prize for an exhibit of sanatorium treatment was awarded to the Frimley Sanatorium, and the first prize for hospital treatment of tuberculosis to the Brompton Hospital, the accompanying essays being the work of Paterson, of Latham, and of Inman. For two of the essays Paterson was awarded first prizes. From Frimley, Paterson went in 1916 as medical director to the King Edward VII. Welsh National Memorial Hospital, and after three years' busy work there was appointed medical superintendent of the M.A.B. tuberculosis hospital at Colindale, where he remained for the residue of his professional life, and where he continued to display the same practical interest in the individual patients, estimating their chances by their capacities and attainments, and sparing no effort to help those who were prepared to help themselves.

Throughout this sequence of important institutional appointments Marcus Paterson was as popular with his colleagues as with the patients. He was a man of a robust and engaging personality, tenacious of any purpose he had in view and untiring in carrying out his ideas, while he had a ready wit and facile repartee. His mordant criticism, where he thought that criticism was due, was well shown in a book, published in 1920, and entitled "The Shibboleths of Tuberculosis," in which, one after another, much of the routine teaching of an older generation was dissected and consigned to oblivion. He stamped as shibboleths such things as the belief that cod-liver oil was essential in the treatment of tuberculosis, that the victim of hæmoptysis must be confined to cold food and drink, that tuberculous empyemas should be opened, and, especially, that change of climate is good for tuberculosis. All the strictures in this valuable and entertaining book were not acceptable, and of some it may be said that they did not deserve to be accepted, but as a whole the work was as sound in teaching as entertaining in style. In later years a motor accident and undulant fever interfered with his activities, and he retired at an age when many men are able to proceed in the fulfilment of earlier promise. Paterson's life-work ceased prematurely, but he had done enough to secure a place for himself in the ranks of his important specialty.

In private life Marcus Paterson was a deservedly popular man; his blunt exterior covered a sympathetic disposition, and he gained the high regard of those with whom he worked and of those with whom he spent his leisure. At the Savage Club, where he was honorary treasurer, he was a highly popular member, while his hobby as a dog-breeder gained for him many prizes and many sporting friends.

PAUL MORGAN CHAPMAN, M.D. Lond., F.R.C.P.

WE regret to announce the death of Dr. Paul Chapman which occurred suddenly at Chatham, on Tuesday, May 31st, in his eighty-first year.

Paul Morgan Chapman was educated at Shrewsbury and University College Hospital. He took the English double diplomas in 1875 and two years later graduated as M.B. Lond, proceeding to the M.D. three years later. For a brief time he was in private practice, unattached to any hospital, and more devoted to the study of Elizabethan literature and classical music than to that of clinical medicine, but he made a reputation as a coach and especially women students sought his assistance. An introduction to Burdon-Sanderson, however, gave him at this time a taste for experimental physiology, and a series of observations on the heart, which accorded with that great physiologist's conclusions, led to an immediate and enthusiastic interest in cardiac disease; then he was invited by Bristowe, whose text-book of medicine which 50 years ago was read by every student had recently appeared, to revise the article on heart disease. In 1894 he delivered the Goulstonian lectures on the Physics of the Circulation. These formed an accurate and scholarly résumé of the knowledge of the day, and were prefaced by an expression of gratitude to Burdon-Sanderson for encouragement received in the experimental work and its graphic representations. These lectures closed with an acknowledgment to the Board of the Hereford General Infirmary for their enlightened assistance, and in those words we have a clue to the reason why Chapman's striking entrance into the field of clinical research was not followed by commensurate results.

The following has been supplied to us by an intimate friend :—

"At University College, over 50 years ago, a friendship began between Paul Chapman and myself which remained unbroken to the last—indeed, he had proposed visiting me on June 1st, just 48 hours before the fatal attack. That he did not take scientific honours at the College was due to no lack of ability, nor to wasted opportunities in the ordinary way, but to his love for Elizabethan literature and music. In the pursuit of the former much of his time was spent in the British Museum over old plays which might have been given to his medical studies, but it was not in a nature of his kind to keep his nose to the grindstone. His tastes from boyhood had taken him to the poets and as a child, it seemed, he would take a volume of Shelley to bed, and Shelley remained to the end his favourite poet, from whom he could repeat long passages even in his last years, as he could with Shakespeare's sonnets and plays. Soon after taking his degree he repeated, at the request of Burdon-Sanderson, a series of confirmatory observations on the heart, which gave him a taste for experimental physiology, especially in its application to cardiac disease. Partly as an outcome of this work he suggested to Bristowe that the article on heart disease in the recent text-book might be improved, and the criticism being accepted by the author Chapman was asked to write a substitute, which he accordingly did. It looked at this time as if a career were opening to him in London and, had he been able to pursue his opportunities, he would, I have little doubt, have taken a position of prominence, especially in cardiac maladies. Unfortunately all such hopes had to be abandoned for a recurring conjunctivitis, owing largely to the dust in London, led Mr. Tweedy (Sir John) to advise his seeking some place in the country. This, for one who was leaning towards a consulting practice and who enjoyed the contact with others like situated was a serious blow, but he recognised the wisdom of the advice. The senior physician to the Herefordshire General Infirmary had just died and Chapman applied for the hospital appointment, obtained it and started in Hereford as a consultant in 1886, and practised in the city until his retirement in 1919. During the war—his three sons were serving—he was physician to the V.A.D. Hospital at Hereford and consulting physician to another institution and for these services was awarded the M.B.E.

"Throughout his career he kept himself informed of the literature of cardiology in this country and abroad, and his position was honourably recognised by his appointment as Goulstonian lecturer at the Royal College of Physicians of London, on the Physics of the Circulation. The lectures were models of clearness, for Chapman possessed notable literary attainments. He was at one time a frequent contributor to the *Nineteenth Century*, and until recently he contributed articles to the *Yorkshire Post* in style much like those of the third 'leader' in the *Times*, in which he displayed a remarkable knowledge of ancient and modern literature. The titles of some of these are suggestive—e.g., 'On Staying at Home,' 'The Grace of the Crinoline.' 'Heroic Metre,' and 'Songs of Spring'—the last written just before his sudden death.

"After his retirement he lived with his wife in part of the Old Rectory at Cascob, on the borders of Radnor Forest, where his wife, the daughter of a former rector, was born. Here he wrote a 'Foot Guide to Radnor Forest,' which was notable, not only for its practical information, but for its wealth of historical allusions and its poetic description of the beauties of the forest. He was a keen fly fisherman and up till recently would spend a week on one of the Welsh rivers, usually with his son, where his skill in guiding a boat through the upper Wye with its many 'streams' and his powers as an oarsman were notable. He was a strong swimmer and, leaving the boat, with his companion (the writer) would thus propel it through the smooth water in Symonds Yat. He was also above the average as an amateur actor, and in support of his hospital compiled, organised, and directed plays, which were performed on a lawn with suitable background, taking himself a leading part. His rendering of Malvolio was an excellent performance, and in order to perfect his part he took advice and help from a prominent London actor. He played the 'cello in a musical society, which he established in Hereford."

The loss of his eldest son in the war was a severe blow to Chapman. He is survived by two sons, both of whom are in the Royal Navy.

ROYAL FREE HOSPITAL

ON June 8th the Queen visited the hospital to open the Queen Mary Building (Albert Levy Wing) and to lay the foundation-stone of the extension to the nurses' home. The extension was much needed for the better accommodation of the maternity, antenatal and postnatal departments, and for the orthopædic and physical medicine units. It was also necessary to provide new kitchens and to install a new heating system. The total cost of the new building and its equipment was estimated at some £250,000. After subscriptions amounting to about £60,000 had been secured, Sir Albert Levy, the hospital treasurer, contributed £55,500 on the understanding that a substantial section of the building should be constructed and brought into use without delay.

The entrance to the Queen Mary Building from the body of the hospital is in a small inner court whence a flight of wide stone stairs leads to a pillared hall. Through this hall may be approached the administrative quarters of the maternity unit, which includes an antenatal and postnatal unit and occupies half of the ground floor of the wing. The various rooms are built to open out of one large central waiting hall, which is fitted with a coffee bar. Mothers can easily be called from this hall to the registration counter, the case-taking room, the separate dressing cubicles, and cloakrooms, and directly from these to the six consulting and examination rooms. The unit has a separate dispensary and a social service room. For students a library and a lecture room have been provided.

The other half of the ground floor of the wing, with the corresponding lower ground floor, houses the department of physical medicine and orthopædics. Curtained dressing cubicles adjoin the treatment rooms. In the orthopædic room is a couch for manipulative surgery and minor operations. Curative exercises are carried out under the direction of the orthopædic surgeon in a fully equipped gymnasium.

The heating system adopted throughout is that of steam-heated panels built into the walls. In the wide central court round which the wing is built, a hard tennis-court has been constructed for the use of the nurses and medical staff.

Nurses' Home Extension.—The first block of the Nurses' Home was erected at a cost of £60,000. It is now necessary to complete the Home at a further cost of £60,000 of which, according to the annual report of the hospital for 1931, only £22,500 is in hand ; a further £30,000 is to be taken from investments, and a balance of £7500 has still to be obtained.

The Queen was received by Lord Riddell, the President of the hospital, Sir Albert Levy, the hon. treasurer, and Miss G. M. Bulman, the matron.

CROYDON GENERAL HOSPITAL.—It is proposed *to extend the accommodation* of this hospital from 130 to 190 beds, including 17 for paying patients. The cost will be £37,000, of which £17,000 is in hand.

MEDICAL NEWS

University of London

At recent examinations the following candidates were successful:—

Honours.—T. A. L. Davies (*c*, *d*, *c*, University Medal), St. Thomas's Hosp.; K. H. C. Hester (*a*, *c*), London Hosp.; P. M. G. Russell (*c*), Univ. Coll. Hosp.; E. F. Scowen (*d*), St. Bart.'s Hosp.; Eileen M. Whapham (*d*), Roy. Free Hosp.; and S. L. Wright (*a*), Univ. Coll. Hosp.

(*a*) Distinguished in Medicine. (*c*) Distinguished in Forensic Medicine. (*d*) Distinguished in Surgery. (*c*) Distinguished in Obstetrics and Gynæcology.

Pass.—John Apley, Univ. Coll. Hosp.; H. B. Barker, St. Mary's Hosp.; W. S. Baxter, St. Bart.'s Hosp.; C. R. Birnie, King's Coll. Hosp.; J. B. Blaikley, Guy's Hosp.; A. E. Bowling and Winifred M. Burbury, Univ. of Leeds; Albert Burkhardt, Univ. Coll. Hosp.; Jack Carlton, Guy's Hosp.; R. C. Cohen, Univ. Coll. Hosp.; Margaret J. Cooper and Iris M. Cullum, Roy. Free Hosp.; James Dawson, Univ. Coll. Hosp.; Mary T. Day, Charing Cross Hosp.; Gwyneth N. Ellis, Roy. Free Hosp.; A. C. Frazer, St. Mary's Hosp.; Barton Gilbert, St. Thomas's Hosp.; G. P. Gladstone, London Hosp.; F. J. S. Gowar, Middlesex Hosp.; Hilary S. M. Hadaway and Kathleen M. Hart, Roy. Free Hosp.; D. K. Jardine, St. Bart.'s Hosp.; I. G. Jones, Univ. Coll. Hosp.; K. D. Keele, St. Bart.'s Hosp.; Alexander Kennedy, St. Thomas's Hosp.; Stephen Knight, Univ. Coll. Hosp.; Robert Knox, St. Bart's Hosp.; Samuel Leff, and H. G. McComas, Guy's Hosp.; N. F. Maclagan, Middlesex Hosp.; F. M. Mallinson, Univ. Coll. Hosp.; Esther M. Martin, Roy. Free Hosp.; L. G. Norman, Univ. Coll. Hosp.; H. J. C. Page, St. Mary's Hosp.; D. D. Payne, St. Thomas's Hosp.; Martin Phillips, London Hosp.; C. R. D. Porter, Middlesex Hosp.; S. R. C. Price, King's Coll. Hosp.; R. D. Reid and A. C. Riley, St. Bart.'s Hosp.; L. K. Robson, Guy's Hosp.; H. W. Salmon, Middlesex Hosp.; A. G. Sanders, St. Thomas's Hosp.; R. W. Scarff, Middlesex Hosp.; S. A. Scorer and A. G. Signy, Guy's Hosp.; D. A. Smith, St. Bart.'s Hosp.; G. L. Talwar, St. Thomas's Hosp.; Margherita N. Walden, Roy. Free Hosp.; Doris E. C. Walker, Univ. Coll. Hosp.; E. M. Ward, St. Bart.'s Hosp.; S. J. Wheeler, Guy's Hosp.; Shirley E. Whitaker, Univ. Coll. Hosp; and A. L. Wingfield, St. Thomas's Hosp.

The following students have passed in one of the two groups of subjects:—

Group I.—Hamish Allan, Middlesex Hosp.; Arthur Barber, St. Bart.'s Hosp.; G. N. Barker, St. Thomas's Hosp.; Mavis W. M. Beddall, Univ. Coll. Hosp.; W. H. Bradbeer, Guy's Hosp.; Joyce M. G. Clogg, Roy. Free Hosp.; P. A. Cooper, Univ. Coll. Hosp.; Kitty Fraser, Roy. Free Hosp.; R. G. Gilbert, St. Bart.'s Hosp.; George Gilchrist, Guy's Hosp.; A. M. Gill, Middlesex Hosp.; Reginald Glanvill, Guy's Hosp.; Lucy W. Grace, Roy. Free Hosp.; M. D. C. Hosford, St. Bart.'s Hosp.; W. P. Hedgcock, St. Thomas's Hosp.; Constance M. Hoare, King's Coll. Hosp.; Agnes V. Kelynack, Roy. Free Hosp.; L. W. Lauste, St. Thomas's Hosp.; J. T. R. Lewis, Middlesex Hosp.; Mary A. McKean, Roy. Free Hosp.; T. H. Parkman, Charing Cross Hosp.; Norah W. K. Petter and Leah Reder, Roy. Free Hosp.; J. F. Rivers-Moore, London Hosp.; Hetty C. Tester, Roy. Free Hosp.; and A. J. White, Middlesex Hosp.

Group II.—R. E. Angel, St. Bart.'s Hosp.; H. G. E. Arthure, Charing Cross Hosp.; F. R. Bettley, Univ. Coll. Hosp.; G. N. Carrell, Guy's Hosp.; G. T. W. Cashell, King's Coll. Hosp.; W. C. Cresdee, St. George's Hosp.; G. E. Dunkerley, Univ. Coll. Hosp.; A. C. Gladstone, St. Thomas's Hosp.; R. D. Green, London Hosp.; E. S. Harverson, Univ. Coll. Hosp.; M. S. Holzman, London Hosp.; J. S. MacVine, and I. W. Matheson, St. Bart.'s Hosp.; C. P. Seeley, St. Mary's Hosp.; S. F. Smith, St. Thomas's Hosp.; K. S. Southam, Guy's Hosp.; J. G. Stewart, Westminster Hosp.; J. L. Woodhouse, Guy's Hosp.; and Joshua Zeitlin, London Hosp.

Slaughter-house Methods and Equipment

The British Science Guild has appointed a committee of technical experts on Slaughter-house Methods and Equipment. The chairman is Sir Arnold Wilson, who was chairman of the Industrial Health Research Board in 1920; the vice-chairman is Captain C. W. Hume, hon. secretary of the Guild; and the hon. secretary is Mr. John McMath. The other members of the committee include representatives of the Institution of Mechanical Engineers (Mr. John Fearn), the Society of Medical Officers of Health (Dr. Charles Porter), the Model Abattoir Society (Sir James Douglas and Mr. R. Stephen Ayling), the Royal College of Veterinary Surgeons (Prof. F. T. G. Hobday and Lieut.-Colonel T. Dunlop Young), the Royal Sanitary Institute (Mr. J. R. Hayhurst), and the Royal Society for the Prevention of Cruelty to Animals (Lieut.-Colonel T. C. R. Moore, M.P., and Mr. R. O. P. Paddison). The Medical Research Council has also been invited to recommend a member. The terms of reference of the committee are as follows:—

> To verify and tabulate information relating to methods of, and equipment for, the slaughtering of animals for food, with especial reference to sanitary, dietetic, and human requirements; to investigate new methods and equipment; to convey information on the subject to local authorities and other bodies and persons.

University of Dublin

Trinity College.—Sir Gowland Hopkins, P.R.S., professor of biochemistry in the University of Cambridge, will deliver the John Mallet Purser lecture on Tuesday, June 14th, at 5 P.M., in the department of physiology. His subject is Some Aspects of Modern Biochemistry.

Indian Medical Service Dinner

The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant, London, on Wednesday, June 15th, at 7.15 P.M. Major-General J. W. D. Megaw will preside, and the guest of honour will be Sir Samuel Hoare, Secretary of State for India. Tickets and all particulars may be had from the joint hon. secretary, Sir Thomas Carey Evans, Hammersmith Hospital, Ducane-road, London, W. 11.

Post-graduate Course on Birth Control

A lecture and a clinical demonstration on the theory and practice of contraception will be held by Dr. Gladys Cox at the North Kensington Women's Welfare Centre at 6 P.M. on June 23rd and 30th respectively. A similar short course will be held on July 14th and 21st. Further particulars can be obtained from the honorary secretary of the clinic, 12, Telford-road, Ladbroke-grove, London, W.10.

St. John's Hospital Dermatological Society

Sir Thomas Lewis will deliver the annual oration of this society at a meeting to be held at the hospital, 49, Leicester-square. London, W.C., at 5.30 P.M. on Wednesday, June 22nd. His subject is Recent Observations on the Causation of Raynaud's Disease.—The annual dinner will be held at 7 for 7.15 P.M. on the same day at the Criterion Restaurant, Piccadilly-circus.

Société Française de Phoniatrie

On May 9th this society was formed in Paris for the study of questions relating to the physiology and pathology of the voice and speech. Prof. Moure is the president, Dr. Hautant and Prof. Lemaitre vice-presidents, and Dr. Tarneaud secretary-general. Dr. Tarneaud's address is 27, Avenue de la Grande-Armée, Paris, XVIe.

Biochemical Society

A meeting of this society will be held at the agricultural research station of Imperial Chemical Industries, Jealott's Hill, Bracknell, Berks., at 3 P.M., on Saturday, June 11th.

The Parkes Memorial Prize

The prize of 75 guineas in money and the gold medal of the Parkes Memorial Prize for 1931 has been awarded to Captain D. C. Ettles, R.A.M.C.

Merseyside Hospitals Council

The annual report of this council, which has now completed its fifth year of work, states that the total income of the 22 associated hospitals in 1927 was £227,000. Their total income for 1930 (the last year for which complete figures are available) was £269,500, an increase of £42,500. The task the council set itself to achieve in 1927 was to extinguish the annual deficit of the associated hospitals, which amounted to £31,500. The ordinary expenditure has, however, increased by £35,000 per annum; consequently the deficit, instead of being more than extinguished, had, by the end of 1930, been reduced only by £7000. It is pointed out that capital expenditure on extensions and improvements during the three years, 1928–30, amounted to £222,000, and it is added: "Much of this expenditure was no doubt essential for medical efficiency, but whether by closer coördination the efficiency of hospital service as a whole might not have been preserved with less capital expenditure is a question deserving close attention." Notwithstanding that at the end of 1931 the contributory scheme was collecting from over 275,000 persons, the decrease in patients' payments between 1927 and 1930 was only £3000. The ambulance work of the council has greatly increased, and last year 8381 patients were taken to and from the local hospitals at the request of the medical authorities.

Appointments

IRVINE, LILIAN, M.B., B.Ch., B.A.O., D.P.H. Belf., has been appointed Assistant Medical Superintendent at the Liverpool Sanatorium.

Certifying Surgeons under the Factory and Workshop Acts: DUNLOP, J. L., M.B., Ch.B. R.U.I. (Hornsea, Yorks); JENNER, C. W., L.M.S.S.A. (Haslemere, Surrey); and MCKEAN, T. S., M.B., Ch.B. Glasg. (Sutton-in-Ashfield, Nottingham).

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

The Town Planning Bill

IN the House of Commons on June 7th the Town and Country Planning Bill was recommitted. On Clause 6 (Preparation or adoption of schemes), Mr. GREENWOOD moved the omission of Subsection 2, which states that a resolution authorising the preparation of a scheme shall not take effect unless and until it is approved by the Minister.

Lieut.-Colonel FREMANTLE supported the omission of the subsection. He said that everybody of experience in town planning, whether voluntary associations or local authorities, supported the Bill as it was originally introduced and regretted that the subsection now proposed to be left out should have been introduced at the instance of the Property Owners' Association. The Association of Municipal Corporations were opposed to the subsection because it curtailed their power to deal with gradual change that might take place in the use of land and the character of buildings within the area of the scheme calculated to prejudice existing property or its amenities or the redevelopment of the land. Those who looked on town planning as a science in local government should be given a free hand because, unless they were untrammelled in covering the whole ground, the scheme was found to fall short of requirements.

The amendment was rejected by 305 votes to 50, and the Bill was read the third time.

Epsom College Bill

In the House of Lords on June 7th the Epsom College Scheme Confirmation Bill was read the third time and passed.

The Public Health (Cleansing of Shell-fish) Bill was read the third time and passed.

HOUSE OF COMMONS

THURSDAY, JUNE 2ND.

Royal Commission on Licensing

Mr. RHYS DAVIES asked the Home Secretary whether any legislation was to be introduced this session in connexion with the report of the Royal Commission on Licensing Laws (England and Wales).—Sir HERBERT SAMUEL replied: As the hon. Member will no doubt have anticipated, the answer is in the negative.

Factory Legislation

Major NATHAN asked the Home Secretary whether he proposed to introduce during the present session a Bill for the consolidation and amendment of the laws relating to factories.—Sir HERBERT SAMUEL replied: I regret there is no possibility of such legislation this session.

Petrol Fumes from Omnibuses

Mr. DAGGAR asked the Home Secretary what steps were taken by his department at present for testing public omnibuses in respect of petrol emanations (fumes and exhaust); if he was satisfied as to their effectiveness; and if he was aware that a number of conductors and drivers of such vehicles were reporting sick, with headache and gastritis, owing to this cause.—Sir HERBERT SAMUEL replied: Every omnibus is given a running test before being licensed, special care being taken to see that no excessive or obnoxious fumes are emitted; and if any vehicle, after being licensed, is seen to be offending in this respect, the licence is suspended and it is removed from service until the defect has been remedied. I have no reason to doubt the general effectiveness of these arrangements; and so far as I am aware only two cases have occurred during the present year in which it is claimed that sickness has resulted from the cause suggested.

Supply of Milk to School-children

Captain HEILGERS asked the President of the Board of Education whether, in view of the increased use of milk in elementary schools in the last year, he would take steps to encourage the further consumption of milk in all schools while at the same time insisting that wherever possible only Certified or Grade A milk should be used.—Sir DONALD MACLEAN replied: I am anxious to see a further extension of the arrangements for the supply of milk to children in public elementary schools, and I a[illegible] National Milk Publicity Council to [illegible] arrangements for the provision of milk by local education authorities, the Board call the attention of the authorities to the importance of their satisfying themselves as to the purity and quality of the milk, and they recommend the use of pasteurised or tuberculin-tested milk.

Cancer Research

Dr. MORRIS-JONES asked the Minister of Health how much of the grant provided by Parliament annually towards the expenditure of the Medical Research Council was allocated for cancer research; how many cancer research workers there were receiving financial assistance; on what basis the individual research workers were selected, and what was the amount of grant received by each, respectively.—Sir E. HILTON YOUNG replied: No special allocation of any part of the inclusive grant in aid received by the Medical Research Council from the Exchequer is made to cancer research as such. I am advised that in our present state of knowledge it is in fact neither possible nor desirable to decide the present or future relevance of particular new lines of inquiry to the special problem of cancer. To work expressly directed to cancer the Council assign at present about £6000 a year, exclusive of expenditure upon radiology and radiotherapy. The work supported by the Council is described in the annual reports which are presented to Parliament, but it is not the practice of the Council to give details of the amount of the grants paid to individual research workers.

Danger of Swamp Fever in Doncaster Area

Mr. THOMAS WILLIAMS asked the Minister of Health what steps the sanitary and health authorities were taking in the Doncaster area to avoid the danger of swamp fever spreading when the floods subsided; and whether his department would undertake to bear any portion of the financial responsibility involved in these measures.—Sir E. HILTON YOUNG replied: I understand from the reports of my inspectors, who, since the floods began, have been and still are upon the spot for the assistance (inter alia) of the local authorities, that the local medical officers of health have been actively engaged in inquiries into the possibility of danger to health, with special reference to the question of pollution of the water-supplies and such dangers as those referred to in the question. The resources of my department are immediately available for their assistance, advice, and support as may be required; but there are no funds at my disposal for the purpose suggested in the last part of the question.

Vaccination in the Army

Mr. NEIL MACLEAN asked the Financial Secretary to the War Office for what reasons an Army order or instruction had been issued to Army medical officers instructing them to discontinue the use of boracic lint and of vaccination pads, and notifying them that when the present stocks were exhausted no further issue of vaccination pads, &c., would be made; whether this order meant vaccination in the Army was to cease; and, if not, whether he would state the purpose of this order.—Mr. DUFF COOPER replied: The decision not to issue further supplies of boracic lint and vaccination pads was made in the interests of economy. Boracic powder and plain lint will be issued instead. The answer to the second part of the question is in the negative.

MONDAY, JUNE 6TH.

Naval Ratings and Invaliding

Sir BERTRAM FALLE asked the First Lord of the Admiralty the number of naval ratings invalided during the year 1931, and the number during this period whose invaliding disability was considered to be attributable to service; and the number of naval ratings invalided during this period with tuberculosis, and the number awarded disability pensions for this disability.—Lord STANLEY (Parliamentary Secretary to the Admiralty) replied: The number of Naval ratings (including Royal Marines) invalided during the year 1931 was 888, and the number whose disability was considered to be attributable to the Service was 193. The number invalided during that period with pulmonary tuberculosis was 156, and in 117 of these cases pensions were granted on the attributable scale.

Sir BERTRAM FALLE asked the First Lord of the Admiralty the number of boy ratings of all branches of the Roya.

Navy and Royal Marines who were invalided during the year 1931, and the number in the same period who were invalided with tuberculosis, heart complaints, and kidney trouble.—Lord STANLEY replied: The number of boy ratings of all branches of the Royal Navy and Royal Marines who were invalided during the year 1931 was 54; the numbers in the same period who were invalided with pulmonary tuberculosis, heart complaints, and kidney trouble were 3, 12, and 2 respectively.

TUESDAY, JUNE 7TH.

School Dental Service

Captain HEILGERS asked the President of the Board of Education the average number of children for whom a dental surgeon was provided by local authorities; and whether he was satisfied that the number of dental surgeons was sufficient.—Sir D. MACLEAN replied: The number of dentists employed by local education authorities under the school medical service is equivalent to one dentist for approximately 9000 children in average attendance. While considerable progress has taken place in recent years, I am fully aware that in many areas there is not a complete dental service.

Miners' Welfare Fund

Sir WILLIAM JENKINS asked the Secretary for Mines what progress was being made with the committee of inquiry into the miners' welfare fund; and when the report was likely to be published.—Mr. FOOT replied: I am informed that the committee expect to complete their taking of evidence this month, and hope to present their report in the early autumn.

Alleged Overcrowding in Paddington

Mr. GOLDIE asked the hon. Member for Central Leeds (Mr. Denman), as representing the Ecclesiastical Commissioners, whether he was aware of the defective condition of, and the overcrowding existing in, the estates controlled by the Commissioners in the borough of Paddington: what steps it was proposed to take to remedy the conditions; and, in particular, what sum it was proposed to expend during the current financial year in alterations and improvements.—Mr. DENMAN replied: The allegation in this question appears to be that houses in the borough of Paddington under the control of the Ecclesiastical Commissioners are suffering from overcrowding or defective conditions. Far from being aware of this. I invite the hon. Member either to substantiate the allegation or publicly to withdraw it.

Coal-dust and Anthracosis

Sir WILLIAM JENKINS asked the Lord President of the Council whether the Medical Research Council was still inquiring into the effect of coal-dust upon underground workers who were suffering from anthracosis: and, if so, when the report would be published.—Mr. BALDWIN (Lord President of the Council) replied: The matter continues to receive the attention of the Industrial Pulmonary Diseases Committee of the Medical Research Council, but I am advised that serious difficulties are still being met in finding trustworthy methods of investigation. There is at present no question of a report.

Imports of Bromine

Sir ALFRED KNOX asked the President of the Board of Trade what amount of bromine had been imported into, and exported from, this country since May, 1931: and what proportion, if any, had been consigned to Germany or Russia.—Mr. RUNCIMAN replied: During the 12 months ended April 30th. 1932. the total imports of bromine and bromides into the United Kingdom amounted to 12.410 cwts., and the exports to 1093 cwts. (including re-exports 664 cwts.). No exports of bromine or bromides were registered during this period as consigned to the Soviet Union, and the only consignments to Germany consisted of 5 cwts. re-exported.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 28th, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 68 (last week 54); scarlet fever, 1346: diphtheria, 681; enteric fever, 28; acute pneumonia (primary or influenzal), 832; puerperal fever, 35; puerperal pyrexia, 111; cerebro-spinal fever, 69; acute poliomyelitis, 4; acute polio-encephalitis, 1: encephalitis lethargica, 13; dysentery, 14; ophthalmia neonatorum, 109. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 31st–June 1st was as follows:—Small-pox 84 under treatment, 2 under observation (last week 89 and 5 respectively); scarlet fever, 1554; diphtheria, 1309; enteric fever, 9; measles, 2314; [illegible] puerperal fever, 15 (plus 6 babies): [illegible] 227; poliomyelitis, 3; "other [illegible] Margaret's Hospital there were 16 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was one death from small-pox, 2 (0) from enteric fever. 74 (26) from measles, 7 (2) from scarlet fever, 34 (3) from whooping-cough, 22 (6) from diphtheria, 40 (13) from diarrhœa and enteritis under two years, and 29 (4) from influenza. The figures in parentheses are those for London itself.

Small-pox was mentioned as the cause of death in a case provisionally assigned to Bermondsey (Met. Borough). The fatal cases of enteric fever outside London occurred at Stockport and Birmingham. Liverpool reported 13 deaths from measles, Burton-on-Trent 4, and Bootle 3. Four fatal cases of whooping-cough occurred at Liverpool and 4 at Manchester. Diphtheria accounted for 5 deaths at Liverpool, 3 at Leeds.

The number of stillbirths notified during the week was 270 (corresponding to a rate of 36 per 1000 total births), including 51 in London.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

THURSDAY, June 16th.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.). Mr. H. Corsi: Rare Type of von Recklinghausen's Disease.

FRIDAY.—8.15 P.M., OBSTETRICS AND GYNÆCOLOGY. Mr. L. Carnac Rivett: Modern Methods for Alleviating Pain in Childbirth. (A discussion will follow.) Dame Louise McIlroy: Indications for Cæsarean Section.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, June 14th.—9 P.M. (at the Great Western Royal Hotel, Paddington, W.), Annual Meeting. Dr. G. de Swietochowski: A Doctor's Mandate. (Presidential Address.)

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, Portland-place, W.

THURSDAY, June 16th.—8.15 P.M., Discussion on Synthetic Anti-Malarial Preparations and Quinine, to be opened by Col. S. P. James, and continued by Prof. W. Schülemann of Elberfeld, Prof. N. H. Swellengrebel of Amsterdam, Dr. C. A. Henry, Sir Henry Dale, and Dr. Keilin.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

MONDAY, June 13th.—2.15 P.M., Mr. Frederick Roques: Prolapse. 3.15 P.M., Mr. W. B. Gabriel: Surgical Ward Cases.

TUESDAY.—2.15 P.M., Mr. McNeill Love: Some Common Diseases of Bones. 3.15 P.M., Dr. Bruce Williamson: Rational Use of Digitalis.

WEDNESDAY.—2.15 P.M., Mr. A. M. Zamora: Atypical Mastoid Infections. 3.15 P.M., Dr. B. Buckley Sharp: Modern Methods of Treatment of Neurosyphilis in Practice.

THURSDAY.—2.15 P.M., Dr. A. Lisle Punch: Cardiac Arrhythmias in General Practice. 3.15 P.M., Mr. L. E. Barrington-Ward: Demonstration of Surgical Cases.

FRIDAY.—2.15 P.M., Dr. W. R. Reynell: The Epilepsies and Allied Morbid Conditions. 3.15 P.M., Mr. Hamilton Bailey: Lecture Demonstration.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, June 13th.—10 A.M., Gynæcological Wards, Skin Dept. 2 P.M., Surgical Wards, Gynæcological and Eye Out-patients.

TUESDAY.—10 A.M., Medical and Surgical Demonstrations. 2 P.M., Throat Out-patients. 4.15 P.M. (Lecture). Mr. Steadman: Pyorrhœa.

WEDNESDAY.—10 A.M., Medical Wards, Children's Out-patients. 2 P.M., Eye Out-patients.

THURSDAY.—10 A.M., Neurological Out-patients, Fracture Demonstration. 2 P.M., Eye and Genito-Urinary Out-patients.

FRIDAY.—10 A.M., Medical Wards, Skin Dept. 2 P.M., Throat Out-patients. 4.15 P.M. (Demonstration). Dr. Archer: Biochemical.

SATURDAY.—10 A.M., Children's Out-patients, Medical Wards, Operations, Medical and Surgical Out-patients daily at 2 P.M. 4.15 P.M., Lectures open to all Medical Practitioners without fee.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, June 15th.—Mr. R. H. J. Swan: Genito-Urinary Tuberculosis.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, June 13th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Cerebral Aneurysms.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Adie: Disseminated Sclerosis.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: Vertigo.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Carmichael: Syringomyelia.

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, June 16th.—4.30 P.M., Mr. J. P. Lockhart-Mummery: Rectal Abscess.

ST. PETER'S HOSPITAL, Henrietta-street, W.C.

WEDNESDAY, June 15th.—3 P.M., Mr. Clifford Morson: Congenital Abnormalities of the Kidneys and their Treatment.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.

WEDNESDAY, June 15th.—4.30 P.M., Mr. Douglas Harmer: Nasal Sinus.

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. M.O. for Radium Department.

Altrincham General Hospital.—Sen. and Jun. H.S. At rate of £150 and

Bath, Royal -Fourth Hon. Surgeon.

Bedford Cou S. At rate of £140.

Belfast, Quee Tutor. £200.

Birkenhead C t. M.O. £350

Birmingham. Cadbury Bros., Ltd, Bournville.

Birmingham Queen's Hospital.—Res. Surg. O. and Res. Surg. Reg. £150 and £100 respectively.

Blackburn Royal Infirmary.—Fourth H.S. £150.

Brighton County Borough, Public Assistance Committee, Poor-law Institution.—Res. M.O. £850 and Sen. Res. Asst. M.O. £400.

Bristol, Ham Green Hospital and Sanatorium.—Jun. Asst. M.O. At rate of £250.

Burnley, Victoria Hospital.—H.P. At rate of £150.

Burton-on-Trent, Bretby Hall Orthopædic Hospital.—Locum. At rate of £350.

Bury Infirmary, Lancs.—Third H.S. At rate of £150.

Bury and District Joint Hospital Board.—Asst. to Med. Supt. £400.

Buxton, Devonshire Hospital.—Asst. H.P. At rate of £175.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. At rate of £130.

Cardiff, City Lodge Institution.—Asst. M.O. £150.

Carlisle. Cumberland Infirmary.—Second H.S. £155.

Carmarthen, Joint Counties Mental Hospital.—Laboratory Asst. £150.

Chailey, Sussex, Orthopædic Hospitals and Schools.—Res. M.O. £250.

Chester Royal Infirmary.—H.S. At rate of £150.

Derby.—Locum Res. Asst. M.O. for Walton Sanatorium, near Chesterfield. At rate of £350.

Doncaster H.S. At rate of £175.

East Lond. *Shadwell, E.*—H.P. and H.S. Each

Exeter, Royal Devon and Exeter Hospital.—Sen. and Jun. H.S. At rate of £250 and £150 respectively.

Freemas *Home, 237, Fulham-road, Chel* te of £250.

Fulham *Hammersmith, W.*—Clin. Asst. At rate of £100.

Glasgow, West of Scotland Neuro-Psychiatric Institute.—Director. £850.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Second H.S. At rate of £120.

Halifax, St. Luke's Hospital.—Jun. Res. M.O. £250.

Hammersmith Hospital, Ducane-road, Shepherd's Bush, W.—Res. Asst. M.O. £350.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.S. At rate of £100.

Hospital of St. John and St. Elizabeth, 60, Grove End Road, N.W.—Res. H.P. At rate of £100.

Huddersfield Royal Infirmary.—Cas. O. and Two H.S's. £225 and £150 respectively.

Hull Royal Infirmary.—Third H.S. At rate of £150. Also H.P. at Sutton Branch Hospital. At rate of £160.

Indian ntments Commission.

Jerusale *Hospital.*—H.S.

Kiddern *eral Hospital.*—H.S. £150.

Kimberl *a.*—Radiologist. £900.

King Edward Memorial Hospital, Ealing.—Sen. Res. M.O. £250.

Lewisham Hospital, High-street, Lewisham, S.E.—H.P. At rate of £80.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Liverpool, Alder Hey Children's Hospital.—Med. Supt. £1000.

London

Middles H.P. £120.

Miller *S.E.*—Out-patient Offi f £150. Also Two H.S.'s and H.P. Each at rate of £100.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. Anæsthetist. £300. Also Jun. Surg. Reg. At rate of £150. Also Res. H.P.'s. and H.S.'s. Each at rate of £50.

Northampton General Hospital.—H.S. At rate of £150.

Norwich, Norfolk and Norwich Hospital.—H.S. to Special Depts. £120.

Nottingham General Hospital.—H.S. At rate of £150.

Oldham Royal Infirmary.—H.S. At rate of £175.

Oxford City.—Deputy M.O.H. £600.

Paddington Green, Children's Hospital, W.—H.P. and H.S. Each at rate of £150.

Preston, Lancs, Biddulph Grange Orthopædic Hospital.—Jun. H.S. £150.

Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—Cas. O. and H.P. £100.

Queen Mary's Hospital for the East End, E.—H.S. At rate of £120.

Queen's Hospital for Children, Hackney-road, E.—Ophth. Surg. Also H.P. and Cas. O. Each at rate of £100.

Reading, Royal Berkshire Hospital.—H.S. £150.

Royal College of Physicians, Pall Mall, S.W.—Two Leverhulme

land-street, W.— Stanmore. At rate of £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.

St. Mary's Hospital, W.—First Asst. Pathologist. £500.

St. Peter's Hospital for Stone, Henrietta-street, Covent Garden, W.C. Clin. Assts.

Salford.—Asst. Res. M.O. for Hope Hospital, Pendleton. At rate of £250.

mary.—Sen. H.S. £200.

Hospital.—H.S. £150.

Jun. H.S. £150.

Staffordshire Royal Infirmary.—Ortho- Also Asst. H.P. £125.

Sudan 720.

Torqua

Tunbri —H.S. £160.

Warrin .S. £175.

West M.O. £350.

Al Each £200.

West End Hospital for Nervous Diseases, Regent's Park, N.W.—Jun. H.P. At rate of £100.

West London Hospital, Hammersmith-road. W.—H.P. and H.S. Each at rate of £100.

Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.

Woking and District Victoria Hospital.—Res. M.O. At rate of £100.

Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. and H.S. Each at rate of £100.

Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £150.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Rocester (Stafford).

Births, Marriages, and Deaths

BIRTHS.

HOLDER.—On May 31st, the wife of Dr. S. E. Holder, of Berks Mental Hospital, Wallingford, of

WALSH.—On June 5th, the wife of of Stucley House, Great West-roa a daughter.

WOOD.—On May 29th, at Park Village West, Regent's Park N.W., the wife of Dr. W. Burton Wood, of a daughter.

MARRIAGES.

BOLT—BULL.—On June 4th, at the Parish Church, Hayes, Kent Dr. William V. Dujardin Bolt to Irene, only daughter of Mr. and Mrs. F. H. Bu

LAWSON—HOWARD.—On J -place David Forbes Lawson, oward, daughter of Thomas H d, late of Portland, Dorset.

MANNINGTON—FAWCETT.—On June 2nd, at St. George's Church, Hornsey, R.C.S. Eng., to Ruth, youngest d Fawcett, of Salisbury, and Mrs. Fawcett, Muswell Hill.

ROBINSON—WILLIAMS.—On May 29th, at Benton, Richard Deane Robinson, M.B., B.S., to Freeda, younger daughter of Mr. and Mrs. C. Williams, of Benton, Illinois, U.S.A.

DEATHS.

BATESON.—On June 5th, at Brighton, after a brief illness, Henry Bateson, M.D., L.R.C.P., L.R.C.S., L.R.F.P.S., of Overdene, Southwick, Sussex, and late of Walkden, Manchester, aged 60 years.

BOUTFLOWER.—On June 1st, at Stonecourt, Kersal, Andrew Boutflower, M.R.C.S., in his 88th year.

CHAPMAN.—On May 31st, suddenly at Chatham, Paul Morgan Chapman, F.R.C.P., M.B.E., in his 80th year.

CHRISTY.—On May 29th, in the Belgian Congo, Cuthbert Christy, M.B., C.M., late Major R.A.M.C., of Chignal St. James, Chelmsford, in his 69th year.

CRUICKSHANK.—On May 29th, at Naylor House, Larkhall, S.W., James Burr Cruickshank, M.B., Ch.B., son of the late Peter Cruickshank, M.A., Tarves, Aberdeenshire.

DE CHAZAL.—On June 2nd, in London, Edmond Lucien de Chazal, M.D. Lond.

GARSON.—On May 31st, at Ewell-grove, Ewell, Surrey, John George Garson, M.D. Edin., L.R.C.S. Edin., in his 78th year.

GRANGER.—On June 2nd, at Fron Haul, Bodfari, Farington Marsden Granger, M.R.C.S., L.R.C.P. (late of Chester).

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE SAFETY OF PEDESTRIANS

LORD DANESFORT'S BILL.

THE Road Traffic (Compensation for Accidents) Bill, sponsored by Lord Danesfort, which won a second reading on June 2nd by 22 votes to 8, proposes to make the motorist liable for traffic casualties irrespective of any question of his negligence. The Bill has no chance of becoming law this session, but its supporters were by no means confined to those who dislike all forms of mechanical transport or who, like Lord Buckmaster, have unfortunately been the victims of accident themselves. Lord Buckmaster's Road Traffic Bill, read a second time last April, sought to increase criminal penalties. Lord Danesfort's Bill merely proposes to extend civil liability and compulsory insurance. It is a Bill for pedestrians and pedal cyclists; it does not apply to accidents between two sets of motorists—because motorists are already compulsorily insured and will be looked after, according to Lord Danesfort, by the insurance companies. Advocates of a change in the existing law can point to the appalling loss of life under present conditions—7300 persons killed in 1930 (over half of them pedestrians), not to mention 178,000 persons injured. Graphic comparisons have been made with the total casualties of the Boer War or of the Battle of Waterloo or with the epidemics of the past, but indeed the figures speak for themselves. Motorists, says Lord Danesfort, are always insured; they have to be, by statute. The pedestrian is seldom insured, and therefore must fight a powerful insurance company which will naturally raise all possible defences. The plaintiff's first obstacle is his duty to prove the driver's negligence. If the pedestrian has been killed, the main witness is removed; if he is seriously injured, his recollection will be confused and imperfect; it may be difficult to produce other witnesses. Thus the plaintiff may be driven to accept what compensation the insurance company may offer rather than fight a long, costly, and doubtful battle.

Even when the plaintiff has proved the driver's negligence, there is a further obstacle in the defence of contributory negligence—a highly technical matter. Parliament, says Lord Danesfort, owes the pedestrian some protection because it has changed the law and now allows the motorist to travel at speeds which, but for the change, would have been impossible. The legal and legislative analogies to the proposed principle of compensation without proof of negligence have already been mentioned in our columns (THE LANCET, March 19th, 1932, p. 629). Other European countries have adopted a similar rule of liability though they vary in the defences they permit. Lord Danesfort's Bill makes an exception where the injury is caused by the negligence of the person injured. He hinted he would not mind amending his Bill to allow another exception (as in some continental countries) in the case of *force majeure*. The Lord Chancellor seemed willing to accept the principle of the absolute liability of motorists. He found an analogy in the legal doctrine that a man keeps a lion or a tiger at his peril; if the animal is taken out upon the highway and escapes or gets out of control, there is liability for consequent injuries irrespective of negligence. Lord Sankey seemed ready to fix motorists with the onus of establishing some lawful defence, but he wanted further examination of the defences available. So much for the legal aspect of the Bill. The practical issue is a matter for the insurance companies. How much will they increase their rates of premium on policies complying with Part II. of the Road Traffic Act? A new class of accidents will be ranking for compensation and the opportunities for unscrupulous claims will be multiplied. The ordinary arguments against the Bill will readily occur to motorist's minds. It is unfair to make a defendant prove his innocence; it is unreasonable to have one liability for the motor-car and another for the farmer's gig; the motorist is already taxed heavily and should be spared further imposition; the average driver is a careful man and not a wild animal; and pedestrians should not be encouraged to sally forth with no sense of responsibility. Earl Howe doubted if many pedestrians are acquainted with the admirable Highway Code issued by the Ministry of Transport. And there is much to be said for Lord De Clifford's plea that the division of road-users into motorists and pedestrians, almost on the lines of class-warfare, is unfortunate and should not be fostered. The Earl of Plymouth, as the mouth-piece of the Ministry, supported the second reading of the Bill but declined to commit the Government to its terms.

In the Memorandum prefixed to his Bill, Lord Danesfort claims that his proposals will help the hospitals by indirectly extending the scope of Section 36 (2) of the Road Traffic Act. The Act has been of such meagre use to the hospitals that they may hardly be interested in the extension. Viscount Cecil read to the House an extract from the Poplar Hospital report which declared that the first year's working of the Act must be taken to indicate that motoring accidents to children are always the child's fault, "for in no single instance has the Hospital's account for the child been paid." If this means that in no single case has a child been able to prove the motorist's negligence, the implications of the statement will confirm many in their support of the Bill. The position of the hospitals in relation to traffic casualties is, of course, a separate problem in itself. Lord Danesfort's Bill, in its endeavour to simplify and shorten its proposals, leaves this problem untouched.

SEX RESEARCH

THE Proceedings of the Second International Congress for Sex Research, edited by Mr. A. M. Greenwood, have been issued in book form.[1] The volume contains 40 papers in English, 21 in German, 11 in French, 7 in Italian, and 1 in Spanish. It is divided into five parts, headed biology, hormones, therapy, contraception, and sociology, each of which covers a very wide range of subjects. Only a small number of these will be of interest to the medical reader. Nearly 200 pages are devoted to a discussion of hormones, but few of the papers have clinical bearings. Of the twelve chapters in the section on therapy, five are in English. These relate to the clinical use of testicular and ovarian hormones, the constitutional factor in human sterility, and the relation of gonorrhœa to marriage. The subject matter of the two papers on contraception contributed by Mr. J. R. Baker and by Mr. C. I. B. Voge has already been discussed at various times in our columns. Though the preparation of an index would have presented formidable difficulties, in view of the different languages in which the papers are written, it would have repaid the trouble expended upon it.

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[1] Edinburgh: Oliver and Boyd. Pp. 637. 21s.

THE SIGNATURES OF PLANTS

IN a case which came up for consideration at the recent meeting of the General Medical Council it was stated. concerning a certain remedy, that a large number of people were employed in collecting the raw material all over the country, at a high expense, while the necessary substance could only be obtained at certain times of the year. The inference is that the remedy is manufactured from plants or a plant, and it is in accordance with custom, where the composition of a therapeutic substance is to remain secret, that we are told that the collection of supply is made expensive because of the rarity of the plants or the obscurity of their habitat. Without assuming that the therapeutic value of our domestic flora has been so well investigated that no plant of any potency remains to be discovered, it is at least unlikely that such is the case, for British botany has been very thorough over a long period. Moreover, the actual value of herbal derivatives has been considerably worked at since the war, when investigations were made to discover if the British Pharmacopœia could be reinforced within our own borders, where circumstances would prevent us from relying upon foreign sources. So that to a considerable extent we can now rely upon scientific trials for estimates formed of the value of any domestic plants.

The popular and almost age-long estimates of the efficacy of certain common plants have been undergoing radical alteration for a hundred years, but an old fame still clings to them. And this has been in some cases due to the influence of symbolism. For the repute of these plants was not infrequently due to what is termed their "signature" and the phrase was often on the lips of bygone herbalists, who were not always consistent in their use of it. Properly speaking, "the signature of a plant" is the possession in any of its constituent parts of some shape or quality suggesting medical employment. In this manner pharmacological claims were supposed to be symbolised. As examples where some characteristic feature of a plant has been regarded popularly as an indication of its therapeutic influences may be mentioned the leaves of the liverwort, a decoction of which has been relied upon as a remedy in hepatic disease; the markings on the inflorescence of euphrasia which dictated its use as an astringent eyewash; and the corolla of prunella. which looks faintly like a bill-hook, wherefore its fomentations have been much esteemed in wounds received by hedgers and ditchers. Similarly certain plants have been regarded as a remedy for pulmonary ailments because their spotted leaves resembled a diseased lung. Sometimes a plant would receive a popular name because of its supposed qualities, and sometimes the popular name would suggest the supposed qualities. "Henbane," for example, is a corruption of "hanging bell," but no one doubts that the name implies that its poison has a particular threat for poultry. Other examples could be adduced of the way in which these popular beliefs have influenced the nomenclature of the hedge-row, and it is just possible that the real medical efficacy of some British herbs may remain to be detected, serious trials not having been made in face of the ancient superstitions.

MALE IMPERSONATORS

THE novel has again made use of the difficult theme the woman in male attire who leads a man's life. Miss Johnstone's heroine ("The Maiden," London: John Murray, 7*s.* 6*d.*) is a pirate and, with reservations, a thoroughgoing pirate until a change of heart comes over her. The story is well told and worth reading. There is possibly an unconscious reason for making the male impersonator into a pirate, as there are several historical precedents. Notably at the beginning of the eighteenth century two women, named Mary Read and Ann Bonney, lived as pirates, but probably as the mistresses of male adventurers; while in the list of women who for one reason or another have donned the habits and imitated the ways of men, it is a curious fact that the sea has always possessed a fascination. The histories of Ann Jane Thornton and Mary Ann Talbot are quite well known, and each managed successfully to conceal her sex for a short period, but none kept up the mystery so completely as James Barry, to whom frequent allusion is made as a female member of the Army Medical Staff. James Barry, whose real name has never been disclosed, though it is suggested that legally she had no name, was a medical student at Edinburgh a century ago, when feminine characteristics in appearance and gait were noticed by other students, but apparently there was nothing sufficiently striking about her female traits to interfere with admission to the Army Staff. In this service she became a prominent person. Some 30 years ago there was considerable correspondence in the columns of THE LANCET turning on her strange history, when several of her actual acquaintances gave descriptions of her appearance, supplying evidence that, in spite of her male attire and military rank, it was a matter of common repute that she was a woman. Reference to Hart's Army List for the year 1865 shows that the name "James Barry" stood at the head of the list of Inspectors General of Hospitals, and in July of that year the *Times* announced the death of "Dr. James Barry," and, later, the fact that it had been officially reported to the Horse Guards that the doctor was a woman. James Barry was said to be the illegitimate daughter of an important peer, and to owe his commission and his official positions in the Service to aristocratic friends, at the same time there appears evidence that she was skilled in her profession. It is noticeable that neither in her case nor in that of any of the marine or military adventurers does there seem any suggestion of sexual perversion. Even in the story of Hannah Snell, who was wounded when serving as a marine, it was always held that this element was wanting, though as "Samuel Bundy" she went through a form of marriage with a woman, and, after discharge from the Navy, the couple lived for years as shopkeepers in the East of London.

PROPHARMACIENS

To the Editor of THE LANCET.

SIR,—I should be glad if one of your learned readers would kindly supply a definition of the words "Propharmacien" and "Médecin Propharmacien." I cannot find these words in my dictionary and I am curious to learn what kind of post this is in France. The words occur in four consecutive advertisements in the current issue of the *Siècle Médical*.

I am, Sir, yours faithfully,

June 2nd, 1932. TRANSLATOR.

DR. W. HOWARD JONES writes: A letter in the *Daily Telegraph* of June 2nd commenting upon the rewards of hospital consultants, over a name identical with mine, has in some quarters been wrongly attributed to me. I shall be grateful if you will enable me to disclaim all responsibility for this letter.

UNDER the will of Sir Dorabji Tata, who has died in Bavaria, it is understood that a large sum of money will become available for medical research. Before leaving India last April he executed a trust deed covering property worth three crores of rupees (£2,250,000) which will be used mainly for charitable purposes. In addition he set aside 25 lakhs (£187,000) for instituting scholarships for the investigation of diseases at present regarded as incurable. Sir Dorabji, who was chairman of the Tata Iron and Steel Works and many other undertakings in Bombay, was an honorary Fellow of Caius College, Cambridge, where he was formerly an undergraduate.

ADDRESSES AND ORIGINAL ARTICLES

THE REACTIONS OF THE EYE TO GENERAL DISEASE *

BY F. A. WILLIAMSON-NOBLE, M.B. CAMB., F.R.C.S. ENG.

SSISTANT OPHTHALMIC SURGEON TO ST. MARY'S HOSPITAL, AND TO THE NATIONAL HOSPITAL, QUEEN-SQUARE; ASSISTANT SURGEON TO THE CENTRAL LONDON OPHTHALMIC HOSPITAL

IT has often seemed to me that the eye affords pportunities for the study of disease which are iven by no other part of the body. Thanks to the lit-lamp and corneal microscope, its anterior layers, s far back as the front portion of the vitreous, are ccessible to observation under a magnification s high as 40 diameters, while the fundus of the eye s seen, with the ordinary ophthalmoscope by the irect method, under a magnification of 14 diameters wing to the lens system employed by Nature.

The eye seems to constitute a pathological laboratory ith a clear window through which we can watch he changes in health and disease undergone by living issue in its natural surroundings. When we emember that the optic nerve and retina are morphoogically portions of the brain, the importance of the phthalmoscope becomes still more evident, since ve have actually exposed to our view a portion of the orebrain which can be examined during life with the tmost ease under a magnification of 14 diameters.

What are the changes, then, that are thus revealed o us in various diseases? There are two ways of nswering this question. One is to take the structures f the eye seriatim and enumerate what happens vhen they are attacked by disease, and the other is o take each disease separately and describe what appens when it attacks the various parts of the ye. The former method seems to me to savour too nuch of the text-book, while the latter would entail nuch repetition, so I trust you will allow me to take he middle course as being the more useful. I have o wish to make my remarks encyclopædic and would refer to be eclectic, picking out from the mass of ccumulated data of medical ophthalmology those eatures which I think are of interest.

Measles

To take, first of all, a very ordinary disease: neasles. It is a commonplace of medicine that the yes require considerable care during the course of his malady, owing to the constant occurrence of onjunctivitis in varying grades of severity, possibly vith corneal ulcers as a complication. It is not robably realised, however, what an intimate relationhip this disease has to the onset of convergent squint n children. The number of cases of squint which late from an attack of measles is really quite large, nd the reason for it is probably as follows.

Non-paralytic convergent squint unassociated with lisease of the retina or optic nerve is due in the ltimate analysis to failure of the fusion centre to orrelate the movements of the two eyes. Most of hese cases occur in hypermetropes and, if the hypernetropia is not corrected with glasses, clear vision an be obtained only by accommodation. The ynergic action of convergence tends to occur at the ame time and, if the fusion power be weak, little or no diplopia is caused and one eye becomes turned in. Binocular vision is a relatively late phylogenetic acquisition and is therefore a function which is easily upset. An analogy with this is to be found in the action of anæsthetics on the central nervous system, in which the highest centres are those to be first affected. An even closer analogy is perhaps to be found in the action of alcohol, over-indulgence in which is traditionally supposed to bring about diplopia and in extreme cases even polyopia. Be this as it may, the toxin of measles seems in a fair number of cases to have some peculiar selective action on the fusion centre in the brain, and to bring about concomitant convergent squint, apart entirely from anything in the way of encephalitis.

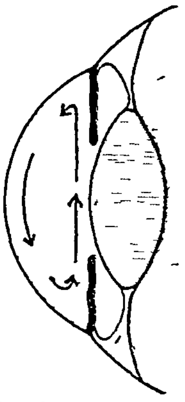
Another sequel of measles, though an uncommon one, is a degenerative change in the macular region of the retina which brings about marked diminution of visual acuity. Here again the phylogenetic theory may come in, since macular vision is a relatively late acquisition.

Reactions of the Iris and Ciliary Body

After this introductory digression, I should like to become a little more systematic and describe some of the reactions of the iris and ciliary body to general disease. These parts must be considered together, as they are structurally continuous with one another. Iritis can be caused by various types of blood-borne infection, the commonest agents being the spirochæte, the gonococcus, and the various forms of streptococci associated with focal infections of the teeth, tonsils, alimentary or genito-urinary tracts, and sinuses. In my experience the first sign of involvement of the iris and ciliary body in an inflammatory process is slight opacity in the aqueous and the occurrence of fine precipitates on the back of the cornea.

Everyone is familiar with the effect of a beam of sunlight passing through a partially darkened room: how it shows up all the motes of dust which are otherwise invisible in the air. The same principle can be applied to examination of the anterior chamber. By means of the slit-lamp, a narrow pencil of rays can be directed obliquely through the aqueous and its path can be observed by a binocular microscope placed opposite the eye. In normal circumstances the aqueous is "optically empty": the fluid contains no particles and so the path of the ray of light is invisible. If there is the slightest turbidity, however, the beam becomes visible, and this so-called aqueous flare is one of the earliest and most reliable signs of inflammation of the iris and ciliary body. Close examination reveals a very interesting movement of the particles. The cornea is in contact with the air, and is therefore cooler than the iris. Hence the fluid in contact with the posterior surface of this membrane is cooler than that in contact with the iris. A thermo-syphon effect results, analogous with the cooling methods employed in some motor-cars, so that the aqueous is kept in constant movement and the particles in the anterior part of the aqueous are seen to be descending, while those in the posterior part, near the iris, are ascending. Fig. 1 shows the direction of the currents.

FIG. 1.



Circulation of the aqueous in the anterior chamber.

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* The first Lettsomian lecture for 1932, delivered before the ledical Society of London on Feb. 29th. The second and third ectures will be published in coming issues.

Clinically, circumcorneal flush is an extremely valuable sign, even though unattended by pain or any definite obscuration of vision. Experience with the slit-lamp has taught me that, in the absence of glaucoma or some inflammatory affection of the cornea, injection of the conjunctiva in the region of the corneal margin means iritis or iridocyclitis, even if nothing can be seen by the ordinary methods of examination. If effective treatment can be instituted at this early stage, there may be complete recovery without any of the usual sequelæ of iritis, such as adhesions of the iris to the lens, spots of pigment on the posterior surface of the cornea, opacities in the vitreous, and membranes on the front of the lens.

CHARACTERISTICS OF IRITIS

Whether the primary cause of iritis is bacteria or their toxins is still a matter of dispute, to which I shall refer again later; the immediate question is the structural changes occurring as a result of the arrival by the blood stream of micro-organisms or their products. The first change is, of course, engorgement of the blood-vessels with œdema of the tissue, and the second the occurrence of cellular infiltration and the formation of exudate. The former is not apparent in the iris itself in the earlier stages of the disease, but is shown indirectly by the circumcorneal flush and by the contraction of the pupil brought about by swelling of the iris, though this is possibly aided by reflex spasm of the sphincter. Exudate is visible in the very early stages only when the slit-lamp is used, but later is manifested as a more obvious haze in the aqueous, often accompanied by a collection of inflammatory products at the bottom of the anterior chamber and on the back of the cornea. The formation of exudate is also responsible for the adhesions of the iris to the underlying lens and the formation of membranes over the front and back of this structure.

Various modifications may occur: one, particularly important clinically, in cases of syphilis, is localisation of the infection to a relatively small area of the ciliary body with subsequent gummatous degeneration of this organ and of the overlying sclera. The importance of the condition is twofold. First, if it be allowed to progress, the sclera will perforate and the eye be lost. Secondly, the only obvious clinical manifestation may be the occurrence of an elevated pinkish-red area on the sclera adjacent to the limbus, similar to the benign condition known as episcleritis.

I well remember a case of this type I had at hospital once:

A man came up with a small reddish-pink area on the sclera, at about "12 o'clock." It looked like episcleritis, but slit-lamp examination showed the presence of a few fine particles in the aqueous, though there was no clinical evidence of iritis. I therefore had a Wassermann test done; it was strongly positive and the swelling rapidly resolved under antisyphilitic treatment. When the iris *is attacked by the toxins or organisms of gonorrhœa* or of focal infection the course is usually more acute.

It is now generally agreed that the aqueous is formed by a process of dialysation from the blood. The capillary vessel wall forms a semi-permeable membrane which allows the smaller crystalloid molecules to pass through but not the large protein ones, the osmotic pressure of the proteins of the blood being thus in large measure responsible for the maintenance of intra-ocular pressure. In the acute types of iritic infection, the aqueous has a high protein content and is almost gelatinous in consistence. This is shown particularly well on slit-lamp examination by an absence of the circulatory movement in the particles. In some cases, particularly gonococcal, the gelatinisation of the fluid is so marked that it makes it look as though the lens were dislocated into the anterior chamber, and there have been cases when this mistake in diagnosis has been made. It is tempting to assume that in these cases some damage is done to the endothelial lining of the capillaries by the gonococcal toxin, so that the protein molecules can pass through.

It is interesting to note the long latency of the gonococcus. The attack usually occurs at the time of the arthritis and often not for years after the initial urethral infection. This may be because it takes a long time for the infection to become generalised, but it also seems as though there were some anaphylactic element whereby the iris becomes sensitised to the actions of the toxin. Relapses are frequent, but they usually occur in the same eye, and if a cure is to be effected by vaccines they must be administered for a very long period. A case I had some little time ago illustrated this sensitiveness of the iris rather well.

He was a man aged 50, and prolonged vaccine treatment, combined with iridectomy, had sufficed to rid him of his trouble. A year or so later he returned with a tremendous attack of acute iritis which had come on after prostatic massage at one of the genito-urinary hospitals. Nothing violent had been done, but presumably a few gonococci or their toxins had been forced into the blood stream and the sensitised iris had immediately reacted. The prostate was then removed, and no further attacks occurred. This treatment is possibly a little heroic for gonococcal iritis, but it was certainly effective.

Focal Infection

The type of iritis produced by focal infection usually bears a close resemblance to that caused by the gonococcus. It is subject to relapses, may remain unilateral for a long time, and usually results in the formation of narrow adhesions between the iris and lens, in distinction to the syphilitic type of iritis which is commonly bilateral and causes broad adhesions. These cases of iridocyclitis due to focal infection are at times extremely difficult to diagnose. The fall into three groups:—

1. The acute type, with a reaction resembling that seen in the gonococcal cases, though the aqueous is not usually so gelatinous.

2. The chronic type with subacute remissions.

Such a case is an aged lady who comes to see me periodically and has been under the care of three generations of ophthalmic surgeons. I am not discussing treatment, or I might tell you of all the things that have been done to her. Suffice it to say that, in spite of many and varied kinds of treatment, she still has attacks of mild cyclitis at intervals of a few months, in which the eye becomes a little flushed and a few fresh spots of precipitate form on the back of the cornea. In spite of this, on her good days, she still has 6/9 vision in one eye, the other eye having developed cataract and a dislocated lens after iridectomy performed many years ago.

3. The really chronic type. In this, there is usually no injection of the circumcorneal region of the conjunctiva, but examination of the eye reveals the *presence of small dots of precipitate* on the back of the cornea. The iris is usually discoloured owing to absorption of pigment by the phagocytic cells constantly present in its stroma, and the lens becomes slowly opaque from defective nourishment, owing to toxicity of the aqueous.

An interesting feature in many of these cases is paralysis of the sympathetic on the affected side. This is shown by the pupils being approximately equal in bright light but markedly unequal in light of reduced intensity, the pupil on the affected side being the smaller, owing to paralysis of the dilator fibres of the iris. The inequality is made still more manifest by the instillation of cocaine. It is a nice point, and one which has *not yet been decided*, whether he sympathetic paralysis is the primary cause of the yclitis. If there are such things as trophic fibres, nd if their course to the eye is via the sympathetic erves, then interference with these nerves will educe the resistance of the iris and render it more able to bacterial invasion.

The whole question of the relation of focal infection o eye disease is to my mind still in the melting-pot. n England and America many ophthalmologists are pt to explain otherwise obscure cases of chronic intra-cular inflammation as due to the action of metastatic eptic foci, and in a fair number of cases they are undoubtedly right, while on the Continent, and particularly in Germany, these lesions are far more commonly ascribed to the action of the tubercle bacillus. One recent writer on ophthalmic pathology [1] has put the matter rather nicely by saying that "an uninitiated reader of the literature might easily be led to suppose that in Germany, and elsewhere on the Continent, tuberculosis is quite a different disease from that which we find in this country, while on the other hand the teeth and tonsils of the British and American people were in some obscure way stimulated to most malicious behaviour." The truth must, of course, lie between these two assertions, though Wright and his co-workers have recently been doing some interesting work on tuberculin. This was the subject of a paper read before this society, so I need not go into the details beyond saying that the experiments showed how increased immunity to organisms such as the staphylococcus could be brought about by the administration of tuberculin. One is not therefore justified in saying that a case of iridocyclitis or choroiditis is tuberculous because the condition improves with tuberculin treatment.

ENDOCRINE FACTORS

Another factor to be considered is the endocrine system. Let me give an illustrative case before discussing the matter further.

A woman, aged 59, was sent to see me from the country with a history that the right eye had become blurred and bloodshot a month previously. Vision of this eye with glasses was only 6/18, while that of the left eye was 6/6 partly. The tension of each eye was raised well above the normal figure of 15–25 mm. Hg, that of the right being no less than 60 and of the left 47 mm. Hg. There was evidence of slight inflammatory change, in the shape of a few dots of precipitate on the back of the right cornea. No evidence of focal sepsis was forthcoming, beyond the presence of a crowned tooth which was removed without affecting the eye condition. It became evident that if nothing were done, the sight, at any rate of the right eye, would be lost. Miotics were ineffective, so I performed an iridectomy, with the double intention of warding off iritis and of reducing the intra-ocular pressure to normal. Recovery in the right eye was uneventful, and 6/6 vision with glasses was attained, but during her stay in the nursing home the patient complained of hæmorrhoids. I thought that this condition was at the wrong end of the body for me, so asked a very able general practitioner of my acquaintance to come in and see her. He prescribed the necessary ointments with satisfactory result but, more important still, told me that the patient looked as though she were suffering from hypothyroidism, and asked if I would agree to putting her on thyroid extract. I did so, with the result that the tension in the unoperated eye gradually came down to normal, vision with glasses came up to 6/6, and the one or two small spots of exudate on the back of the cornea slowly absorbed.

It seems to me, therefore, that in chronic iritis and cyclitis many factors may be involved. First there are the actual causative organisms. The crux of the matter, to my mind, hangs on the word "causative." In other words, why do these organisms cause the iritis ? Most of us probably have, somewhere in our bodies, hidden foci of infection, and we do not develop iritis. I possess, for example, a couple of crowned teeth, and I believe my tonsils are not above suspicion, but so far they have not occasioned me any inconvenience. It seems conceivable, however, that if the thyroid mechanism were to break down under the continued onslaught of chronic sepsis, as in McCarrison's fishes, or from some other cause, a vicious circle might be established and various forms of inflammatory change become manifest. We are not right, therefore, in always attributing the occurrence of these cases solely to micro-organisms. In the case I was mentioning there seems little doubt that thyroid insufficiency was also a cause, and that the simple fact of giving thyroid extract was enough to put the patient right.

ANAPHYLAXIS

Another point of view is the anaphylactic one—I can perhaps best explain what I mean by analogy.

I remember, when a student in the dermatological department at St. Mary's Hospital, seeing a man with a violent eczematous sort of condition of his forearm. He gave a history of having worked in sandal-wood for many years—I think it was about 20. He had never had any trouble until recently, but now the slightest trace of sandal-wood oil was sufficient to cause him dermatitis and he wanted to know what to do about it.

A similar condition is always cropping up in eye work—namely, atropine irritation. A patient may use atropine for weeks in the treatment of a chronic iritis and then, suddenly, the lids and adjacent skin of the face will become swollen and red, so much so that I have known the condition to be diagnosed as erysipelas. It entirely subsides on withdrawing the atropine, but reappears if the drug is instilled into the eyes again. It seems likely that the iris may become similarly sensitised to the action of certain bacteria or toxins, so that a patient with irides of this type would produce an inflammatory reaction with a very much smaller dose of organisms than one whose irides were normal. It is for this reason that I always like to use small doses of vaccine rather than large ones, at any rate in the early stages, because it seems to me that what we have to do is to desensitise the patient before we can hope to start on immunising him. A similar reasoning has been applied by some, notably Derby and Walker, Iggersheimer, Schoenberg and Wesseley, to the ætiology of interstitial keratitis.

The cornea illustrates the effect of the anaphylactic factor rather well. The last named of the above observers [2] injected one or two drops of inactive beef or horse serum into the tissue of the cornea. There was a little reaction, which all passed off in a few hours. Some eyes showed no further change, but in others, after 12 to 14 days, there was some injection followed by a progressive opacity in the deeper layers of the cornea, sometimes with vascularisation. If at this time a small quantity of serum were introduced into the cornea of the other eye, the characteristic interstitial inflammation developed within 24 hours instead of within 12 to 14 days. A variation of the experiment was to give 4 c.cm. of serum intravenously at the end of 14 days. If the injected eye had not already developed interstitial keratitis, it did so within 24 hours, and if it had previously developed keratitis, the inflammation became more severe.

These experiments have been applied to the elucidation of human interstitial keratitis in the following manner. It has been proved, histologically, that spirochætes can wander into the cornea in congenital syphilis without producing any notable reaction. Their presence, however, or the presence of their toxin, may be enough to sensitise the cornea. If now, at some period of the child's life, the general resistance becomes lowered—through, say, one of the exanthems—the spirochætes latent in some part of the body may again become active and the eye, previously sensitised, will speedily react.

The same effect may follow local trauma to the eye, and many cases of interstitial keratitis date the onset of this disease from some minor injury to the cornea such as that produced by the entry of a foreign body. Such cases are very difficult when the question of compensation arises. No definite opinion seems to have been expressed yet as to whether interstitial keratitis following a blow or injury to the eye can be regarded as attributable to this or not.

The anaphylactic theory also helps to explain the resistance of the disease to treatment. On the whole, a case treated with antisyphilitic remedies runs a more benign course than one which is not so treated, but on the other hand, it is not very uncommon for interstitial keratitis to break out in the unaffected eye while the patient is actually under general treatment for syphilis. If only a small quantity of antigen is required to provoke the anaphylactic reaction, such a course of events can be easily understood.

ELECTIVE LOCALISATION

Another point bearing on this aspect of the ætiology is the work of Rosenow on the elective localisation of bacteria. The theory is that organisms become accustomed to certain conditions for growth and do not grow except under these conditions. Oxygen tension is an important and variable factor, and it is thought that organisms will attack another part of the body if they can find there the same oxygen tension as obtained in the original focus. The most striking confirmation of this theory of elective localisation has been provided by Benedict. He grew streptococci from the teeth of five patients suffering from acute iritis, due presumably to dental infection, and injected them intravenously into rabbits, with the result that material from four of the patients produced iritis. On the other hand, streptococci grown from the teeth of nine patients suffering from chronic iritis failed to produce any ocular lesions on intravenous injection into rabbits. I am not a bacteriologist, and so am not in a position to say what it is that makes the microbes do this—whether they become, so to speak, habituated to certain conditions in the teeth which are also present in the eye so that they can migrate there and continue to live, or whether a new strain which has this property is implanted on the old ones. The reaction seems to be a fairly delicate one, however, and to occur only at certain stages of virulence. Thus Rosenow,[3] on passaging a strain of pneumococci through rabbits, found that at the eighteenth passage they produced suppurative conjunctivitis, at the nineteenth iritis, and at the twentieth marked conjunctival and scleral hæmorrhages, while subsequent passages failed to produce eye lesions. A similar result was obtained with another strain at the tenth and fourteenth passages, and the same kind of thing occurred with *B. coli* and with staphylococci. The injections were made intravenously, and an interesting feature was the association of lesions in other parts, such as the appendix, joints, stomach, pericardium, and kidneys, with the injections which affected the eyes. Perdreau has found a similar phenomenon with herpes virus in the production of encephalitis by passaging.

From the ætiological standpoint, it is perhaps worth while to have some figures bearing on the relative frequency of the various causes of iritis. Numerous tables of this kind have been published, one of the earliest being by Arlt, as long ago as 1853. The latest, and probably the most reliable, is that by S. R. Gifford.[4] His total number of cases was 118, and of these 22 per cent. were of tonsillar and 16·9 per cent. of syphilitic origin, 12·7 per cent. were due to infected teeth, 8·5 per cent. to combined infections, 6·8 per cent. to sinusitis, and 6·8 per cent. to gonorrhœa. Of these 5·1 per cent. were attributed to prostatic infection, 1·7 per cent. to pelvic infection in women. A further 1·7 per cent. were diabetic, while in 16·1 per cent. no cause was found.

This division agrees fairly well with my own impression of the causes of iritis, though possibly the tonsillar figure is rather higher than one would expect. Gifford's figures were, however, very carefully compiled, and in cases where more than one possible cause was present, the one mentioned as the ætiological factor was that of which the removal was followed by complete relief of symptoms.

Syphilis

Syphilis and tuberculosis are two fairly common diseases, and I should like to say a little more about the reactions to them of the iris and ciliary body. From a purely ophthalmic standpoint, one would say that iritis is a fairly common complication of syphilis, but on going into the figures it appears that only from 0·42 to 5·37 per cent. of syphilitics acquire iritis during the course of the disease, though probably double this number have involvement of some part of the eye, since Groenow found that among 2000 patients with syphilitic ocular disorders 45 per cent. had iritis.

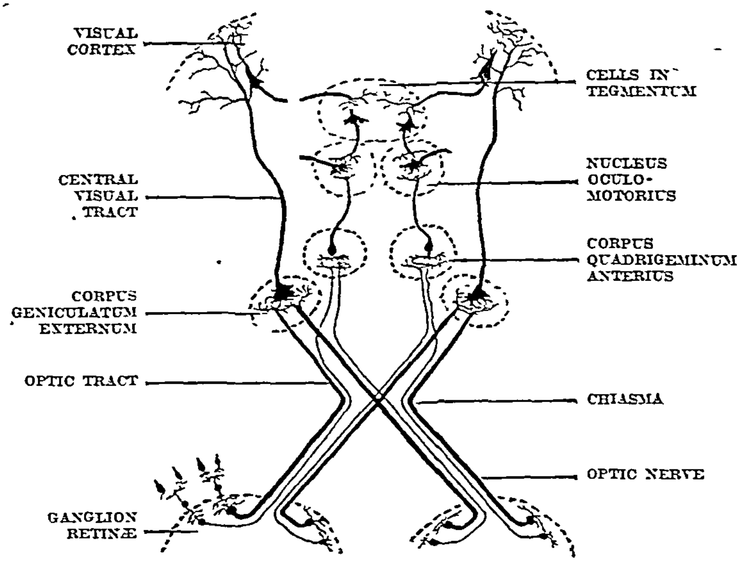
The iris may be involved in the course of the disease or possibly as the result of faulty treatment. If, for example, in a case of well-established untreated syphilis, arsenicals are vigorously used in the early stages, a large number of spirochætes are killed, their toxins are liberated, and a Herxheimer reaction is produced which may involve the iris. I remember this happening to a patient of mine at hospital who had quite a mild syphilitic iritis. He was sent to the venereal disease department of another hospital, where he was given a full dose of novarsenobillon, with the result that the iritis became much more violent, though it eventually quietened down under continued treatment. On the other hand, if efficient treatment is begun early but is not continued for a long enough period, the iris is very liable to a *rezidiv* reaction, since it and the uveal tract, in common with the central nervous system, are slow to develop natural immunity. If, therefore, the normal inflammatory response has been aborted by the early use of antisyphilitic remedies, the few spirochætes that remain after treatment has ceased will find, so to speak, a virgin soil and grow apace, with the production of severe iritis. It is worthy of note in this connexion that spinal fluid findings indicate a higher percentage of neurosyphilis in patients with iritis than in those without it.

From the diagnostic standpoint, it is unfortunate that the reaction of the iris to syphilis is not always the same, and quite frequently it is impossible to distinguish an iritis due to this cause from an iritis due to one of the many others. It may be comforting, however, especially to those whose field of action is not limited by the bony margin of the orbit, to know that nearly all the cases of early iritis in a recent survey[5] have had other recognisable signs of secondary syphilis, though sometimes these had to be looked for carefully.

Typical syphilitic iritis does, however, occur and so merits a short description. It is characterised chiefly by the appearance of one or more nodules at the pupil margin or at the periphery of the iris which vary in size from that of a hemp seed to a small pea id in colour from yellowish to reddish-brown. he intervening iris is comparatively unaffected. hese nodules are not gummata and soon clear up ider treatment, but the latter may develop in the rtiary stage of the disease in the same way as they in the ciliary body. They are then considerably rger, are solitary and, when they break down, ave an area of atrophy in the iris.

Late syphilitic iritis is not so easy to diagnose, nce it is, of course, obvious that syphilitic patients ay easily develop iritis from other causes, and mmermann[6] estimates that in 6·7 per cent. of itients with supposed syphilitic iritis and a positive 'assermann reaction the ætiological factor is one ther than philis. Also it is t uncommon in te syphilitic tis, as in other te manifestations of this sease, to find at the Wassermann reaction is gative. In a cent survey[5] the 'assermann reac- n was positive 97 per cent. of ses of early tis, and 55 per nt. of recurrence ses, 81 per cent. which had late philitic iritis. he therapeutic st ought to be liable, but even is is open to llacies for two asons :—

FIG. 2



Relations of nerve cells and fibres of visual apparatus. (Schafer.

1. Late syphilitic sions, particularly if they involve the cornea, are notori- sly difficult to cure as quickly as syphilitic lesions sewhere.

2. Many cases of non-syphilitic iritis are benefited by course of arsenical antisyphilitic treatment. An instance this was the old lady I mentioned earlier who had suffered om iridocyclitis for many years. On two occasions I have dered her a course of six injections of N.A.B., and each time e inflammatory symptoms disappeared and did not recur r some months.

THE ARGYLL ROBERTSON PUPIL

The association of syphilis with the iris inevitably ings up the problem of the Argyll Robertson pupil, ne of the many vexed questions of neurology. I not propose to go into it at all deeply, because to so would take up at least one whole lecture and ould entail a wide excursion into the anatomy of the ntral nervous system. In a recent publication by innier Wilson,[7] from which I have gleaned much seful knowledge, he cites no fewer than 72 references, that the subject is a large one. So many conflicting pinions have been held at one time or other, however, at I feel it is worth while to say something on this bject, especially as some recent work, and in articular some cases cited by Wilson himself, have one much to clarify the pathology of the condition.

In the first place, what exactly is the Argyll obertson pupil? It seems to consist essentially in ne absence or a marked diminution in the reaction the pupil to light with preservation of its reaction accommodation-convergence. There may or may ot be associated myosis, and the consensual reflex to light on illuminating the fellow eye may or may not be present. The lesion is to be regarded as the consequence of destruction, whether by toxins, new growth or trauma, of a certain part of the pupillo-reflex arc. It would therefore follow that, although the Argyll Robertson pupil is in a high percentage of cases due to neurosyphilis, it is not necessarily pathognomonic of this disease.

It may be of service to mention other diseases in which it occurs, though these are well known. First and foremost is lethargic or epidemic encephalitis, a disease which is particularly interesting, since some cases of it show the reversed Argyll Robertson phenomenon—i.e., reaction to light and none to accommodation-convergence. Secondly, it has been found in cases of disseminated sclerosis, and in syringomyelia and syringobulbia, while chronic alcoholism has also been known to produce it. Most interesting of all, however, from the pathological standpoint are the cases of cerebral tumour which are associated with an Argyll Robertson pupil. A sufficient number of cases would now seem to have been published to establish the truth of the observation that tumours in the region of the third ventricle, aqueduct, or anterior corpora quadrigemina may give rise to this type of pupil reaction. In particular, injury of the anterior corpora quadrigemina appears to cause it. This is interesting, if we follow for a moment the path of the pupillomotor reflex (Fig. 2).

The afferent fibres subserving this purpose leave the retina by the optic nerve and undergo a partial decussation at the chiasma, whence they pass to the anterior corpora quadrigemina. From here their path to the third nerve nucleus is not yet certain, and one observer (Majano[8]) has even suggested that the fibres have no cell station in the third nerve nucleus at all but pass directly as preganglionic fibres to the ciliary ganglion and thence to the sphincter iridis. The path of the impulses bringing about contraction of the pupil in association with accommodation-convergence must necessarily begin in the cortex (since this is a willed movement, synkinetic with convergence) and go on to the third nerve nucleus. It would thus appear that, distal to this nucleus, the pathways for iris contraction in response to light and to accommodation-convergence are identical, and this is shown experimentally by the fact that lesions of the third nerve trunk never cause an Argyll Robertson pupil reaction. Hence the site of the lesion must be on the afferent side of this nucleus, and the most likely one seems to be in the neighbourhood of the aqueduct, where fibres passing from the corpora quadrigemina to the third nerve nucleus may be caught before they enter the latter. Moreover, the accommodation fibres are sufficiently far removed from this neighbourhood not to be affected.

The special ability of syphilis to produce the lesion is to be attributed to the peculiar affection of the syphilitic toxin for the terminal aborisations of afferent nerves, the toxin spreading from the aqueduct into the subependymal tissues. The localisation of the lesion to this part of the brain may also serve to explain the myosis which is so frequently present, since it is probable that fibres carrying inhibitory impulses from the cortex to the sphincter iridis pass through the peri-aqueductal tissue, and so are affected by the toxin diffusing into this tissue.

In the interest of brevity I have made these remarks rather didactic. The localisation of the lesion producing the Argyll Robertson pupil is not yet by any means certain, and there are still several theories, but the one I have just given seems to be the most logical and to fit in best with observed clinical and pathological data and so to be worthy of notice, even in a general lecture.

It seems possible for an Argyll Robertson pupil to develop apart from any other manifestation of organic disease. I have seen one or two myself, and the cases have been carefully annotated and described by Foster Moore [9] and by Gordon Holmes.[10] The principal characteristics are that the affected pupil is usually larger than normal and does not contract to any form of light stimulus, the contraction to convergence being slow and relaxation also slow, usually taking 8 to 10 seconds, and in some cases as long as 90 seconds. Only one eye is involved as a rule and there is no sign of syphilis either serologically or clinically. In Foster Moore's cases, which number 15, there was no constitutional disease, nervous or otherwise, but in Gordon Holmes's 54 cases there were disturbances of some of the other reflexes in 19—e.g., the knee- and ankle-jerks might be absent. These cases are important and, judging by the numbers reported, are commoner than one would think. It does not do, however, to assume that a patient belongs to this category until syphilis has been definitely disproved.

This was brought home rather forcibly to me by a patient with an apparent Argyll Robertson pupil referred by a physician who expressly stated that there was nothing in the history to support the diagnosis of syphilis. She came after I had read the articles to which I have just alluded, and seemed to be a clear case of the condition. Vision in the eye with the Argyll Robertson pupil could not be improved beyond 6/12, though the other was normal, but this could be accounted for by the presence of a small area of pigmentary disturbance in the macular region of the retina. With the non-luetic hypothesis still in my mind, I inquired whether she had ever looked at an eclipse of the sun, since this might produce the pigmentary disturbance. I was rewarded by the assurance that she had done so when abroad a few years ago, and that while looking she had kept the left eye closed.

The case seemed a clear one, but to be on the safe side I thought it as well to have a Wassermann done—which, I need hardly add, was positive.

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B. COLI MENINGITIS IN THE NEW-BORN

By John Gibbens, M.B. Camb., M.R.C.P. Lond.

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In post-mortem examinations on new-born infants during the last year or so at Queen Charlotte's Hospital, three cases of meningitis due to the *Bacillus coli* have been seen. In one only of these was the diagnosis made during life; the other two were thought to be cases of intracranial hæmorrhage.

Cruickshank [1] believed that in many cases, possibly the majority, there is post-mortem invasion of the tissues by the organism: "one hesitates to attribute to coliform organisms a pathogenic rôle, but there are some cases in which they may be the causal organism." In one of my cases *B. coli* was recovered in pure culture from purulent cerebro-spinal fluid during life; in the other two cases post-mortem examinations were made shortly after death, and the organism was not only cultured, but found in direct smears of the pus. It seems likely that these three cases, at any rate, are true cases of *B. coli* meningitis.

CASE RECORDS

Case 1.—Girl born on April 10th, 1931, four weeks prematurely; the first baby of an apparently healthy mother. Normal labour; the child seemed perfectly well immediately after birth, took the breast well, and cried lustily. Puerperium entirely normal.

April 14th (fourth day): moderate amount of bright red blood passed per rectum during the night; 12 c.cm. of mother's whole blood injected into the child's buttocks, after which there was no more melæna.

April 17th (seventh day): mild fever, refusal to take the breast, and two loose green dyspeptic stools. Considerable œdema of the lower limbs (pitting on pressure) and of the scrotum, but no œdema of the back of the trunk, head, or arms. Nothing abnormal found in the abdomen or chest. Colour good. No abnormal physical signs in the central nervous system; fontanelle not tense. Cord normal. Skin normal. The baby did not seem ill.

April 18th (eighth day): temperature of 102·6° F. A catheter specimen of the urine showed no pus, but large numbers of Gram-negative bacilli; on culture a thick growth of coliform bacilli was obtained.

April 20th (tenth day): still passing green stools and developing sore buttocks. Œdema of lower limbs unchanged, but now has a puffy face.

April 24th (fourteenth day): œdema much the same, but hands and feet now definitely in a tetanic position. Chvostek and Trousseau's sign negative. Fontanelle apparently quite normal. No rigidity or paralysis and no squint. Nothing abnormal was found in the heart, lungs, or abdomen. Urine: no albumin and no pus.

At this point the case closely resembled those recently described by Shannon [2] under the title of Tetany, General Œdema, and Cerebral Compression in the New-born (see below), and so the child was ordered calcium chloride grs. 5 twice daily. In view of the absence of nervous signs apart from the tetany and apparently a normal fontanelle, no lumbar puncture was done.

April 25th (fifteenth day): the child had four fits in which she made "a curious cooing noise," screwed up the left eye and left angle of the mouth; this lasted about 15 seconds then ceased abruptly.

April 26th (sixteenth day): three more fits, as before. Urine: no pus.

April 27th (seventeenth day): four fits, as before. There was now more œdema of the eyelids, but no increase in œdema of the legs. The hands and feet were now in an extreme tetanic position. All reflexes increased; bilateral extensor response very marked. No increase in tension of the fontanelle. No squint or nystagmus. No stiff neck. No fever. No disturbance of respiratory rhythm—in other words, Shannon's complete clinical picture. Accordingly calcium-Sandoz (1·0 c.cm.) was injected intramuscularly and 0·25 c.cm. of parathormone subcutaneously.

April 28th (eighteenth day): condition of the child hanged. Urine: no albumin or pus. Considerable of weight and pallor. Slight increase in tension of the tanelle. Lumbar puncture in three places was successful.
April 29th (nineteenth day): death.

Post-mortem.—The hands and feet of the child were ll held in an extreme tetanic position, the most rked I ever remember to have seen. The brain s covered with a thick green layer of pus, almost e wash-leather. The pus was thickest at the base d at the tip of the temporal lobes; apparently pus had spread upwards from the base towards vertex. The pus was so thick over the spinal rd that obviously no fluid would have passed rough the needle on lumbar puncture. The right ddle ear was also full of pus, but the left middle was free from infection.

The heart, lungs, pericardium, and pleura were all normal the naked eye; no thymic enlargement. The liver and een were slightly enlarged; nothing abnormal was seen section. The kidneys, ureter, and bladder appeared lthy. No microscopical changes were found in the roid or parathyroid glands.

Direct smears of the pus from the meninges and ht middle ear showed *B. coli*, and on culture an nost pure growth of this organism was obtained.

Case 2.—A full-term female child, born after a ficult labour with forceps. White asphyxia mediately after delivery, which disappeared after hot bath and an injection of 1 c.cm. of coramine ramuscularly. For the first 36 hours of life no normal symptoms were noted except that the by was rather drowsy, but next day there were riods in which the baby was restless and crying ntinuously alternately with periods of somnolence. e baby took the breast with difficulty.

On examination there was slight stiffness of the neck d the mouth was set in a straight line suggesting an early as sardonicus. Fontanelle: normal tension. Pupils all; occasionally nystagmoid jerks. Kernig's sign gative; Chvostek sign negative. No abnormal physical ns were found in the heart, lungs, or abdominal organs. ine: no albumin or sugar; nothing abnormal micro- pically. Cord apparently healthy. Mild icterus onatorum.

The diagnosis was intracranial hæmorrhage following olonged labour with forceps and the treatment was solute rest with small doses of chloral.

The next day, the fourth day of life, the condition of baby was much the same, except that now there was ght irregularity of the heart—occasional bursts of tachy- rdia, followed by a succession of beats at the normal rate. undice slightly increased. The respirations were celerated and although no definite Cheyne-Stokes respira- ns were seen, they tended to be irregularly grouped. e fontanelle was now certainly a little tense, so a lumbar ncture was performed, and to my great surprise about c.cm. of thick pus was withdrawn after gentle aspiration th a syringe. From this pus *B. coli* was obtained in pure lture. Half an hour later the child had a general nvulsion and died.

At the *post-mortem examination*, 12 hours after ath, the brain findings were identical with those Case 1. Pus was present in the left middle ear, t in the right; a pure culture of *B. coli* was grown om this pus.

Pharynx, nasopharynx, and tonsils microscopically rmal; no ulcerative lesion of the mouth. Cord: no lence of inflammation. No ulcerative lesions were seen the stomach, duodenum, small or large intestine. Slight largement of the liver and spleen, microscopically early tty degeneration. The kidneys appeared normal to the ked eye.

Case 3.—Born on Sept. 10th, 1931, weighing lb. 9 oz. The mother had had a myomectomy rformed at Chelsea Hospital nine years previously, d when seen in the antenatal department at Queen Charlotte's on April 4th more fibroids were found. A note on August 10th says that the head could be pushed in well; per vaginam no obstruction, but fibroids tender on palpation.

She was admitted for induction, and pitocin (two units hourly for six doses) was given on August 31st, but since no pains came on during the following five days bougie induction was begun on Sept. 5th. During Sept. 8th and 9th, pains were very slight and little advance was made by Sept. 10th, so finally forceps were applied and the baby was delivered without any difficulty.

Immediately after birth the baby seemed quite normal, but on the third day the temperature rose to 101° F. On examination it was noticed that the child seemed abnormally limp and toneless and there was a peculiar fixity of gaze, but no rigidity or paralysis, and the fontanelle was not tense. The respirations were normal, and no abnormal physical signs were found in the abdomen, heart, or lungs. Mouth quite moist. Lumbar punctured in three places without success. Chloral was given, and the child kept absolutely quiet. Next day the fixity of stare was more marked, the child was refusing the breast, and there was now definite head retraction; the fontanelle was not tense. Death occurred a few hours later.

Post-mortem.—Changes in the brain identical with those in the other two cases. No pus in the middle ears, but pus in both pleural cavities. Macroscopically the heart, lungs, and abdominal organs appeared normal. Direct smears of the pus from the pleura and meninges showed *B. coli*, and this organism was obtained in almost pure culture.

DISCUSSION

Cases of *B. coli* meningitis have long been known. In 1895 Scherer [3] gave an excellent description of three infants, almost exactly the counterpart of Cases 2 and 3 described above. The condition is, however, said to be comparatively rare, and in 1926 Neal [4] could only collect 42 cases. The point of greatest interest is the source of the infection. Scherer [3] observed that his cases all occurred at a time when the hospital was overcrowded and thought that the Eustachian tube might have been infected with contaminated bath water; an otitis media resulted and a meningitis followed by direct extension. Such a theory would not fit in with our cases in which overcrowding and contaminated bath-water can be absolutely excluded. This primary infection of the middle ear with secondary invasion of the meninges is an attractive hypothesis and would certainly fit in with the clinical picture of Cases 1 and 2, but it is difficult to say whether this infection takes place antenatally, intranatally, or postnatally. Aschoff [5] has shown that passage of liquor amnii up the Eustachian tubes during efforts at premature respiration is fairly common, and that antenatal or intranatal infection can occur seems to be proved by the case reported by Hinsdale,[6] in which after expulsion of the placenta a large quantity of pus came away from the uterus. The baby subsequently died of *B. coli* meningitis. In a case of Barron's [7] it was highly probable that the infection had been conveyed by a finger introduced into the mouth of the infant during labour.

In other cases, the meningitis is apparently part of a generalised *B. coli* sepsis; in some apparently pus and *B. coli* are found in the urine, in others *B. coli* abscesses in the subcutaneous tissues. Case 1 must be regarded as one of these, the melæna on the fourth day being probably the first evidence of sepsis. This case presented considerable difficulty in view of the close similarity to tetany. At this time I had not read Koplik's excellent description of meningitis in the new-born [8] where it is stated that "the most frequent diagnosis apt to be ventured in a meningitis is tetany," but that tetany is even rarer than meningitis. Shannon's description of Tetany, General Œdema, and Cerebral Compression in the New-born[2] seemed to fit the picture perfectly. In these cases carpopedal spasms, extreme irritability, and sensitiveness to light and sound, increased reflexes and a positive Chvostek's sign were found; also œdema of the extremities and to a less extent of the trunk; and the sign of cerebral compression consisted in (1) periods of depression almost amounting to unconsciousness, (2) a slow pulse, and (3) cyanosis.

In two at least of Shannon's cases there was a history very suggestive of birth trauma, and post-mortem examination in one case showed severe œdema of the brain. On treatment with calcium, parathormone, and ergosterol, some of his cases recovered. Looking back on Case 1, it is clear that lumbar puncture should be performed in all new-born infants showing symptoms of disease in the central nervous system. Only by lumbar puncture can the true diagnosis be established.

Several lessons were learnt from these three cases: firstly, that pressure signs are often absent in meningitis and bulging of the fontanelle occurs late if at all. The anatomical conditions within the skull, the immaturity and lack of functional differentiation of the brain at this early age, the rapidity with which pathological changes in the nervous system of new-born infants takes place, the considerable degree of expansion of the brain that may take place within the skull before there is any evidence of increased intracranial pressure—these all account for the fact that cerebral diseases in the new-born have quite a different symptomatology from those in the adult. Instead of localising cortical or meningeal signs, we are dealing with symptoms and signs which are mainly due to irritation or paralysis of the medulla. In some of the cases reported there have been no symptoms whatever beyond trifling fever and the meningitis has been discovered only post mortem. In doubtful cases lumbar puncture should always be done to settle the diagnosis, although it is futile from the point of view of treatment, as no case has ever yet recovered. The longest duration of the disease I have found reported was in Noeggerath's case.[9] This child, born after normal labour, had convulsions on the eleventh day and œdema and petechiæ of the hands and feet on the seventeenth day. There was also a facies resembling tetanus neonatorum, increased nervous excitability, twitchings on the slightest percussion of the skin, a positive Trousseau's sign (although a negative Babinski and Chvostek's sign), and irregular intermittent fever. In the eighth week there was a bilateral ear discharge. The fontanelle was slack and never bulged throughout the whole illness. Death occurred three months after birth, and post mortem *B. coli* meningitis with an internal pyocephalus was found.

A FURTHER CASE

The following case may be added, in view of the frank cerebral symptoms, although definite evidence of meningitis was not found.

On Nov. 7th a boy was seen at Queen Charlotte's Isolation Hospital, at the age of 4½ weeks. Birth weight: 8 lb. 11 oz. The weight had dropped to 7 lb. 14 oz. on the third day of life, and after this there was a very slow gain, so that the birth weight was not regained till the thirtieth day. During this time there were no symptoms of any kind. Fed on an ordinary milk mixture. On Nov. 7th, the thirty-third day of life, the temperature suddenly rose in the morning to 106·5° F., the infant developed a greyish pallor, the respirations became extremely rapid, and the pulse-rate uncountable.

Seen at 5 P.M. on Nov. 7th, the temperature had dropped to 103°. The baby looked extremely ill, with a toxic appearance—big staring deeply-sunken eyes, and acute dehydration. The mouth and tongue were very dry, and the fontanelle slightly sunken. The respirations were very rapid and shallow, and the pulse could only just be felt. No abnormal physical signs were found in the lungs or heart, and none in the abdomen. No rigidity of the neck and no squint. No specimen of the urine was available.

Diagnosis.—? pyelitis. A catheter specimen of the urine was ordered, and water was given in large amounts by the mouth, also subcutaneously.

Nov. 8th.—At 5.30 A.M. the baby began to have left-sided convulsions. Seen at 10 A.M., the baby was semi-conscious, having rhythmic clonic twitchings about one a second of the left arm and leg and of the left side of the face and tongue. The right ear was pouring stinking pus; the left drum was injected but not bulging. The fontanelle was a little tense. Pupils equal size, reacting well to light; no squint; no stiff neck; Kernig's sign negative; no rigidity of the arms or legs. There was now much less dehydration and the mouth and tongue were moist. Respirations and pulse-rate still very rapid. No abnormal physical signs in the abdomen, chest, or throat. Stools normal.

Diagnosis.—Meningitis secondary to otitis media.

During the day, the following investigations were made: (1) Pus from the right ear swabbed; mixed growth of *B. coli* and *B. proteus* obtained. (2) Lumbar puncture; 0·5 c.cm. of clear fluid under normal pressure removed. Sterile; no increase of cells or protein. (3) 4 c.cm. of blood aspirated from the superior longitudinal sinus for blood culture; pure growth of *B. coli* obtained. (4) Urine cultured; mixed growth of *B. coli* and *B. proteus*. At 10 P.M. he was very much better and now perfectly conscious, but getting dehydrated again. Took water greedily from the bottle. Pus still pouring from right ear; left drum unaltered. Respirations now 36 per minute; no Cheyne-Stokes respiration. No twitchings since lumbar puncture at 10 A.M. Treatment: all food stopped and water given ad lib.; chloral and bromide; H_2O_2 to the right ear.

Nov. 9th.—5 P.M. Temperature 98·6°. Irritable when roused, but otherwise rather drowsy. No stiff neck. ? slight rigidity of the legs; accentuated knee-jerks and bilateral extensor response. A few *right-sided* twitchings were noticed in the morning; none present at 5 P.M. Fontanelle normal. Abdomen, chest, and throat normal; mouth now quite moist. Normal stools. Treatment: 15 per cent. dextrimaltose solution ad lib.; seven feeds of 1 oz. of ordinary milk mixture. Potassium citrate and sodium bicarbonate, grs. 20 of each, four-hourly.

Nov. 10th.—Very much better. No physical signs whatever. Seven feeds of 2½ oz. taken well. Urine: no pus.

Nov. 12th.—Weight: 8 lb. 3 oz. During six days, loss of weight has been 11 oz.

Nov. 16th.—Still rather pale, but has gained 6 oz. in four days; taking all feeds well—six feeds of 4½ oz.; normal stools.

This child was kept in hospital for six to seven weeks more, during which time there was never any recurrence of the cerebral symptoms. An acute attack of fever occurred in December, when the urine was found to contain pus and *B. coli*; this responded rapidly to the ordinary alkaline treatment. Finally, he was discharged well, without any nervous or urinary signs whatever; no ear discharge.

Diagnosis.—*B. coli* septicæmia with cerebral symptoms, pyelitis, otitis media.

I should like to thank Dr. R. M. Fry and Dr. Elizabeth Cooper, pathologists at Queen Charlotte's Isolation Hospital, Goldhawk-road, by whom most of the pathological work was done; and Dr. Eric Pritchard for permission to publish the cases.

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PAPWORTH VILLAGE SETTLEMENT: NEW HOSPITAL. A new hospital for men is to be built at the *Papworth Village Settlement for Men* with gifts of £20,000 from the trustees of the late Mr. Bernhard Baron and £2500 from the joint war finance committee of the British Red Cross Society. The building, which is to be "constructed by Papworth's own industries," is to be named "The Bernhard Baron Memorial Hospital."

TETANUS CAUSED BY TOY PISTOL WOUNDS

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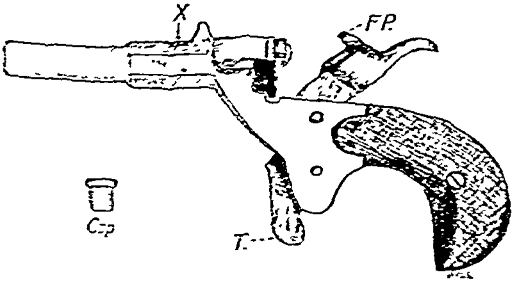
THE low rate of incidence of tetanus at the present time is undoubtedly due to the widespread prophylactic administration of antitetanic serum (A.T.S.), and the following cases are reported in order to indicate an unusual type of injury in which it is essential that serum should be given. In each case the wound was the result of playing with a toy pistol, part of the charge entering the hand. These pistols are often of foreign manufacture and are badly made. Considerable force is required to pull the trigger, which often jams, and it is probable that the pistol is held with two hands in order to steady. It is obvious that in this case one hand would be placed on the barrel and the metacarpal region of the hand would be just over the hole from which the charge escapes (X). Three of the four cases were fatal, the deaths all occurring in London in the first four months of 1932. These three deaths seem to us important enough to warrant a brief record of the cases.

CASE 1.—A boy, aged 18 years, occupation "domestic" (exact nature unknown), was admitted to the County Hospital, York, on May 10th, 1928.

History.—On May 3rd the patient was playing with a toy pistol and received a wound in the right hand. The charge entered the palmar aspect of the metacarpal region, and emerged on the dorsum. He was treated in the casualty department of the hospital, some fragments were removed from the wound, which was sutured and dressed. No A.T.S. was given at the time of the injury. The wound appeared to be progressing satisfactorily during the next few days, but on May 8th the boy complained of backache and general malaise, and on May 9th had more definite stiffness of the back.



F.P. = Firing pin. T. = Trigger. X. = Where charge escapes.

On admission, on May 10th, there was definite trismus and rigidity of legs and arms, but no spasms. The wound of the hand was mildly infected, but there was no cellulitis or pus present and no suggestion of gas gangrene. Treatment with A.T.S. was commenced at once, and there was definite improvement in the symptoms until May 13th, when he was more rigid and had a severe serum rash. He remained in a serious condition for the next five days, and on May 18th there was marked opisthotonus and risus sardonicus. After this day there was definite improvement again, and on May 27th there was no stiffness, he could eat solid food and felt well. He was discharged cured on June 20th.

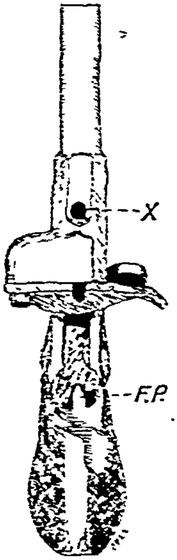
Treatment.—On admission (May 10th) 2000 units of A.T.S. were given by intramuscular injection, 20,000 units intravenously, and 27,000 units intrathecally; and on May 11th and 12th 10,000 units intravenously with 10,000 units intrathecally. Intravenous injections were given daily until May 18th, when the symptoms were worse and [illegible] units were given intrathecally. Intravenous injections of 10,000 units daily were continued until May 23rd, and for two more days 10,000 units were given by intramuscular injection. In all, 252,000 units of concentrated A.T.S. were administered. The usual symptomatic treatment was carried out; the wound was not opened up, but healed gradually with antiseptic dressings.

CASE 2.—A butcher's assistant, aged 17 years, was admitted to the Royal Free Hospital, London, on April 7th, 1932.

History.—On April 1st, whilst the boy was playing with a toy pistol, which was jammed, the charge from the cartridge entered his left hand between the thumb and first finger. He was treated in the casualty department, the wound being explored, cleansed, and stitched. The following day, as the wound was inflamed, the stitches were removed and fomentations applied. These were continued until he was admitted with tetanus on April 7th. The earliest symptom was backache on April 6th.

On admission, on April 7th, he had definite trismus and generalised stiffness. The wound was deep in the first metacarpal space, and although the tissues were sodden and infected there was no gas gangrene. Antitetanic serum was given, but the symptoms became rapidly worse. After about 12 hours the spasms became almost continuous and the boy died on April 8th, less than 24 hours after admission, and only 40 hours after the onset of symptoms.

Treatment.—On admission the patient was given 20,000 units of A.T.S. by intravenous injection, and 20,000 units by intrathecal injection. In addition, 41,000 units were given by intramuscular injection, making a total dose of 81,000 units of concentrated serum, and for some hours before death chloroform was required for the spasms.



After death the parts surrounding the wound were excised and dissected; the muscles were soft and pulpy, and no foreign material could be detected. Films showed scanty pus cells and a small number of cocci and Gram-positive non-sporing bacilli. Blank cartridges of the same batch as those used by the patient could not be obtained for examination. From a box bought in the same district six cartridges were picked to pieces, the small white circular padding cut up, and the fragments cultured in meat infusion tubes under anaerobic conditions. The cultures remained sterile, with the exception of a few aerobically growing cocci.

The two following cases I did not see, but was told about them by the coroner after the inquest on Case 2.

CASE 3.—A man of 26, a sewerman, was admitted to the Royal Northern Hospital, London, on Dec. 31st, 1931.

History.—On Dec. 24th he bought a toy pistol, and when firing it at home injured his right hand at the base of his first finger. He was treated in the casualty department of the Royal Northern Hospital until Dec. 31st, when he was admitted with lock-jaw. Large doses of antitetanic serum were given, but he died on Jan. 2nd, 1932, about 48 hours after admission.

CASE 4.—A man, aged 50 years, occupation furrier, was admitted to St. Mary's Hospital, London, on March 5th, 1932.

History.—On Feb. 27th he bought a toy pistol, and whilst trying it in the shop received an injury in the left hand at the base of the first finger. He was treated immediately by a chemist, who also dressed the wound for the next four days. On March 4th he complained of a sore-throat. On March 5th he had stiffness of the jaw and was admitted to hospital. He died on March 7th, 44 hours after admission, about 50 hours after the onset of definite symptoms.

Treatment.—On the day of admission the patient was given 5000 units of A.T.S. intramuscularly, 75,000 units intravenously, and 20,000 units by intrathecal injection.

On March 6th 100,000 units were given intravenously—a total of 200,000 units.

The coroner kindly supplied us with a blank cartridge similar to that bought by this patient. It was a different make from those previously tested, being marked with an "E," and the wadding appeared to be rather more bulky. Fragments were distributed into two meat infusion tubes and cultured anaerobically; after 48 hours both showed a cloudy growth, accompanied by a putrefying smell and free gas formation in the medium. The organisms were small, rather slender, Gram-positive bacilli, with occasional longer filamentous forms, and numerous sporing forms containing oval, subterminal spores distending the bacillus. Nothing suggestive of *B. welchii*, and no end-sporing bacilli were seen. These cultures in amounts of 0·1–0·5 c.cm. were injected subcutaneously into mice and guinea-pigs, and were tolerated without apparent ill-effects.

Further attempts to isolate the tetanus bacillus, if it should be present in these primary cultures in small numbers, were carried out by successive platings from the filamentous growing edge and the water of condensation, but without success.

Cultures from the wadding of this cartridge thus yielded bacillus sporogenes only. In view of the difficulty of isolating the tetanus bacillus from mixed company, this failure does not negative the possibility of the presence of tetanus spores, and the demonstration of other anaerobic bacteria indicates the wadding as the probable source of infection.

COMMENT

The similarity of these cases is quite evident. In each case there was a deep wound of the hand, and it is interesting to note that this was the site of injury traditionally believed to be the cause of lockjaw. Similar treatment was carried out in casualty departments and by the chemist in Case 4, and the wound became mildly infected or appeared to be superficially satisfactory. In no case was there evidence of gas gangrene nor of frank suppuration requiring incision. This type of penetrating wound with mild secondary infection provides almost the optimum media for the growth of anaerobic organisms if such are present, and the primary suture of the wound renders the conditions even more favourable. It should be noted that no prophylactic A.T.S. was given in any of the cases.

The symptoms of tetanus developed in each case between the fifth and seventh day following the injury. Such a short incubation period is well recognised as one of the features of the most severe cases of tetanus. The time elapsing between the initial symptoms and the appearance of definite signs of tetanus was longest in Case 1, where the prodromal backache commenced two days before admission. In the fatal cases the symptoms developed within 18 hours. This rapid development of symptoms has been shown to be an index of the severity of the infection in a series of cases recently reported from an agricultural area, where the symptoms in all the fatal cases developed in two days or less.[1] The treatment adopted for the fully developed disease varied only in the amount of serum which was given. The initial dose given in Case 1, which recovered, was smaller than in any of the fatal cases, although the symptoms on admission were as severe as those of Case 2, who died within 24 hours. The very large dose given to Case 4 did not succeed in preventing a fatal issue. It is, however, impossible to tell at the beginning which cases will prove fatal, and therefore large doses of serum should be given immediately. A very rapid development of symptoms would seem to indicate an unfavourable prognosis.

AMERICAN EXPERIENCE

Tetanus resulting from toy pistol and blank cartridge wounds does not seem to have received much notice in England, but it was well recognised in the United States, where it was known as Fourth-of-July tetanus, owing to the large number of cases following the Independence Day celebrations. In 1903, in spite of official warnings of the danger of tetanus from these wounds, over 400 deaths were reported.[2] The infection in these patients was extremely virulent, the incubation period being only four to five days, and death occurring within 72 hours. In the majority of the cases the wounds were in the hands. In order to reduce the heavy mortality in future years, the prevention of the sale of toy pistols and blank cartridges was recommended, and physicians were advised not to dress the wound without removing the cartridge wad, and also to give a prophylactic dose of A.T.S. The measures taken were evidently successful, for only three deaths were reported after the Independence Day celebrations in 1914.[3]

In an analysis of 813 cases of tetanus occurring in a New Orleans Hospital between 1906 and 1930, Graves [4] reported 24 cases due to blank cartridge wounds, occurring mainly after celebration days—the mortality being 83·3 per cent.

ORIGIN OF INFECTION

It is interesting to discuss the possible origin of the infection in this type of tetanus. The bacilli must either enter the wound in that part of the charge which penetrates the deeper tissues, or be carried in from the skin, or be introduced at a later date. The last suggestion seems the least likely in the cases here reported. The diverse occupations of the patients could scarcely account for this type of infection, especially as the wounds appeared to heal satisfactorily on the surface. Nor is it probable that the infection was carried in from the skin at the time of the accident, though this is suggested as a possible factor in some of the Fourth-of-July cases.

The wad which keeps the powder in the end of the cartridge is said to be made of coarse horse-hair felt, which might convey spores. This wad was investigated in connexion with Cases 2 and 4, but no tetanus bacilli or spores were isolated. Following the 1903 fatalities, a large number of blank cartridges were investigated.[5] In no case was the tetanus bacillus isolated by direct culture, but in one animal series the wad, together with a loop of an aerobic culture, was inoculated into rats, and 9 out of 12 animals died in convulsions. The conclusions reached were that there was abundant evidence from clinical observations that the wads contained tetanus bacilli, although no absolute bacteriological proof could be obtained.

It is evident that tetanus bacilli or spores are present in these toy pistol wounds, and although the number of cases is small, fatalities can be avoided if the importance of a prophylactic dose of serum is realised, and if in addition the wound is excised or laid open instead of being sutured.

Dr. C. Weatherall, bacteriologist to the Royal Free Hospital, has investigated the cartridge wads, and I am indebted to her for the bacteriological reports. I have to thank Mr. F. D. Saner and Mr. R. M. Handfield-Jones for permitting me to use the notes of Cases 3 and 4, which I did not see; Mr. C. A. Joll for permission to publish Case 2; Mr. G. W. Gostling for allowing me to treat and report Case 1, and Dr. Bentley Purchase, coroner for St. Pancras, for giving me much helpful information.

Dr. P. F. L. Simon has kindly made the illustrations of the toy pistol.

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STREPTOCOCCAL SEPTICÆMIA MPLICATING EPIDEMIC INFLUENZA

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N a recent symposium in the *Guy's Hospital* orts[1] the clinical features of streptococcal ticæmia were discussed at some length. The nparative rarity of the disease is evidenced by being able to find only 21 examples admitted Guy's *Hospital between 1921 and 1930. The two* es to be described hereunder both occurred during influenza epidemic. The second case was of the minant type and similar to Case 2 in Part I. of paper referred to above.

DESCRIPTION OF CASES

ASE 1.—A lean, sallow but alert boy of 15½, se mother had died of streptococcal septicæmia owing labour, had been seen by Dr. John Parkinson January, 1931, for a faint systolic murmur heard his apex-beat. Dr. Parkinson thought, on radio- ical evidence, that his heart was slightly enlarged, l ordered moderate exercise. The patient played ket without fatigue or dyspnœa. Of some 20 boys is house who had not previously had chicken-pox had been the only one to escape infection during epidemic in the previous term. His tonsils and noids were removed in December, 1925, and there e no tonsillar remnants.

e contracted epidemic influenza on Feb. 1st, 1932, h was probably the eighth or ninth day after contact. had a slight frontal headache and a mild sore-throat. ch was studded with small raised lymphoid nodules. following day he had a very sore-throat and slight derness over his left frontal region with headache, eved by inhalations. These complaints quickly sub- d, but the tenderness reappeared over the left frontal on on Feb. 9th, to disappear next day. On Feb. 11th had a folliculitis on the posterior pharyngeal wall, and adenoids, which could be seen projecting below the la, also showed purulent follicles. Next day there was enormous boggy mass on the right, obliterating the right sillar fossa and extending as an œdematous swelling l over to the left side of the soft palate. This subsided three days, but a precisely similar swelling appeared on right side. There was a large diffuse mass of glands ind the left ear.

e was gravely ill, and there was much difficulty in feeding . He had the mildest delirium on the night of the 17th, ncident with his fall of temperature or "crisis." On 16th he vomited practically everything given him and ted to have diarrhœa, having five copious very fluid k brown stools on the 17th, and four the following day. m these *Bacillus coli communis* and *Streptococcus brevis* were grown. A blood count (17th) showed 12,500 white d-cells (polymorphs 86 per cent., lymphocytes 5·5 per ., and mononuclears 8·5 per cent.). On Feb. 18th a ll patch of purpuric spots appeared over the anterior l of his right axilla, and there were numerous scattered echiæ over his trunk and arms, and a few on his legs. od culture, which was done that evening, was negative. L. G. Parsons saw him with me at this stage and agreed t he had a blood-stream infection with streptococci, and e a hopeful prognosis. He felt the spleen, which I was able to feel at any time. From Feb. 16th to 21st the had albuminuria, but two microscopic examinations ed to reveal casts or red blood-cells. On Feb. 19th the spots were more numerous and larger, situated mostly on the back and trunk, and a fresh crop appeared the following day, but from then onwards they rapidly faded, leaving definite staining.

At 7.30 P.M. on Feb. 21st he coughed up about 2 drachms of ropy rose-coloured sputum, which was odourless and tasteless. The bacteriological report on this was: direct examination showed pus cells, streptococci, gram-negative bacilli and filaments; gram-negative cocci and fusiform bacilli. The predominant organism in culture was the hæmolytic streptococcus. *Micrococcus catarrhalis* was also grown. No *B. pfeifferi* were seen. Although the expectoration of this material did not immediately relieve his throat symptoms, yet from that time the swelling and glands quickly subsided, until by Feb. 24th the glands were normal. On Feb. 27th he was up for 20 minutes without undue fatigue, and by March 4th he was walking up to three miles a day, and went home to convalesce. During the illness his weight dropped from 102 lb. (Jan. 21st, 1932) to 85 lb. (March 3rd, 1932).

In this case of streptococcal fever the throat bore the brunt of the infection, and there seems no reasonable doubt that he had a quinsy which burst on Feb. 21st, but the succession of purpuric spots occurring synchronously with his diarrhœa, vomiting, and albuminuria, and possibly a splenic tumour, is strong confirmatory evidence that there was a blood-stream infection with streptococci.

CASE 2.—A robust, florid boy of 14½ had an early carditis in July, 1928, following tonsillitis, but made a complete recovery. Tonsillectomy was performed in February, 1929. His pulse-rate during convalescence from measles in March, 1931, averaged 72. On January 29th, 1932, he "felt rotten" all day but played what the other players called a magnificent game of hockey. That evening, when his temperature was found to be 100·4°, he was put to bed but had no symptoms except malaise and a very injected and slightly œdematous throat. He was considered to have epidemic influenza, having been exposed to it. The following day, when he had a temperature of 105°, a pulse-rate of 130, and a respiration-rate of 28, he still complained only of malaise, and he had no physical signs except a doubtful diminished air entry at the left base, and a thickly furred tongue and throat, and laboured respirations. His leucocyte count was 5000 per c.mm.

Lord Dawson saw him that evening (30th) and came to the conclusion that he had influenza with a streptococcal infection of the throat and possibly of the blood stream as well. Later that evening he vomited much bile-stained material, was incontinent of urine and fæces, and had the most explosive and copious diarrhœa on that and the following day. He was extremely restless and stuporose but not delirious. In view of his low blood count he was given intramuscularly that evening 20 c.cm. of antiscarlatinal serum, followed by 15 c.cm. the next day and 25 c.cm. on the following day. The accompanying table gives his daily blood counts.

On Jan. 31st the diarrhœa and mental derangement disappeared, and he recognised everybody from that time onwards. That day he had one diarrhœic stool. The fur on his tongue was disappearing, and the following day he had a smooth, lilac-coloured, moist tongue dotted with red papillæ. His throat was red and hæmorrhagic in places. On Jan. 31st and Feb. 1st and 2nd there was a trace of albumin in his urine, not measurable by Esbach's albuminometer. He was taking fluids and light nourishment well and was continent.

On Feb. 2nd, high-pitched bronchial breathing was heard over two separate areas the size of a florin, 1 inch from the apex of the right upper chest behind; there was also slight impairment at the right base. He had pain on deep breathing over the apex. That evening he became desperately ill, had acute meteorism, and was tender over the entire abdomen but especially over the right iliac fossa. The dullness at the right base was increasing. Blood culture (Feb. 3rd, when his temperature was 103°) gave a growth of *S. hæmolyticus*. The same organism was later grown from both pleural cavities. Next morning (3rd), when Lord Dawson saw him again, his abdominal condition had completely subsided but the dullness at the right base had increased and low-pitched bronchial breathing and absent tactile vocal fremitus were noted. He was needled, and some thin chlorine-coloured fluid was obtained which, on settling, gave a sediment of less than ½ inch in 3 inches of fluid.

From then onwards he held his own, except that his respiration-rate rose gradually to 44 on the 5th, when 15 ounces of fluid was removed from the right chest; this fluid was not appreciably thicker than before, but its removal eased his respiration slightly. His heart was displaced only ½ inch to the left. On Feb. 6th he was again seen by Lord Dawson, who detected a pleural friction rub in the sixth space in the left nipple line. A deep breath provoked pain over this spot. He was then extremely ill, but in view of the involvement of the left chest, and as his white blood-cell count was 23,000, it was decided to drain the right side. This Mr. B. L. Laver did under a local anæsthetic, the patient giving all the help possible by his willing coöperation, despite his grave condition. About 1½ pints of flaky pus drained away at the time of operation and during the night. The improvement after the operation was not marked, partly because the septicæmia continued and partly because of the presence of the effusion which was collecting on the opposite side, and perhaps partly because—despite the dexterity of the operator—the wound was not completely air-tight. The left pleura was needled but only a few *drachms of turbid fluid were obtained* and the needle gave the impression of underlying solid lung. It was therefore decided to try to make the wound air-tight, which was easily done by the introduction of a Tudor Edwards tube; the patient's breathing and condition quickly improved. However, at 2 A.M. on Feb. 8th he suddenly collapsed and died in a few minutes.

Blood Counts of Case 2

Date.	Total.	Polymorphonuclears.		Lymphocytes.		Mononuclears.		Eosinophils.	
		Percentage.	Actual number.	Percentage.	Actual number.	Percentage.	Actual number.	Percentage.	Actual number.
Jan. 30	5,000	66	3,300	28	1400	3	150	3	150
,, 31	10,000	87	8,700	9	900	4	400	—	—
Feb. 1	7,000	85	5,950	11	770	4	280	—	—
,, 2	9,900	84	8,316	11	1089	5	495	1	99
,, 3	10,000	89·5	8,950	6	600	4·5	450	—	—
,, 4	13,000	83	10,790	13	1690	4	520	—	—
,, 5	16,500	84	13,860	13	2145	3	495	—	—
,, 6	23,000	87	20,010	9	2070	4	920	—	—
,, 7	36,000	85	30,600	11	3960	4	1440	—	—

FIG. 1 (Case 1).

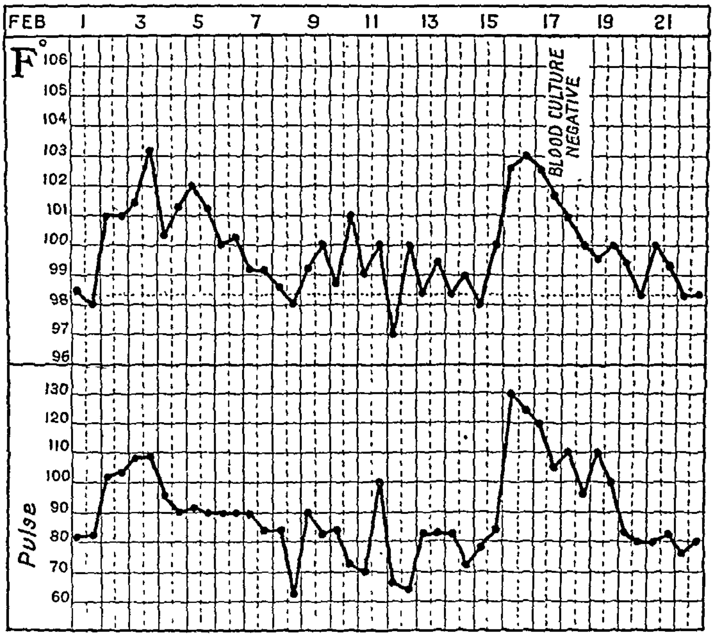
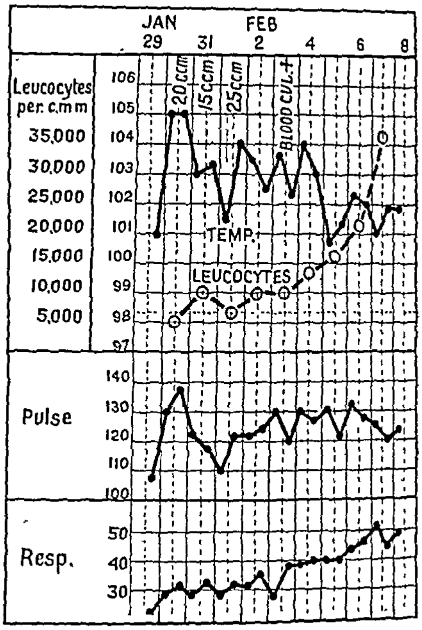


FIG. 2 (Case 2).



DISCUSSION

Ryle[1] lays stress on the four symptoms of diarrhœa; albuminuria with red cells and casts; a rapidly progressive anæmia; and a smooth, red, desquamated and sore tongue, as a diagnostic syndrome in blood-stream infections with hæmolytic streptococci, but points out that all are not invariably present. Both my cases had transient diarrhœa, but apart from that they had well-formed stools. Both had albuminuria, but one certainly had no red cells nor casts, nor probably did the other. Despite the fact that a hæmolytic streptococcus was grown from the blood of Case 2, yet his hæmoglobin was 95 per cent on the eighth day of his illness. Both had smooth, red, and desquamated tongues, although these were not subjectively sore. The tongue in Case 2 was usually a deep puce colour, corresponding to the colour of his lips and extremities, which was little influenced by oxygen intake.

What remains a most useful diagnostic sign is the mental acuteness of these sufferers, long since recognised in the puerperal cases. As Osler and McCrae[2] put it: "Certain clinical features separate the streptococcus from the staphylococcus infection, chiefly the absence of delirium, a rather abnormal mental acuteness, and the presence of a greater degree of anæmia." Apart from the initial stupor of Case 2, and the very mild delirium of Case 1 at a time when his temperature was dropping and he was considerably dehydrated owing to his throat condition, delirium was completely absent. In dealing with these very ill patients one cannot but be grateful to them for their willing coöperation.

Influenza and streptococcal septicæmia frequently occur together, and there is no doubt that the patient suffering from the dual infection requires special consideration and handling. It has long been known that influenza initially produces a leucopenia which may pave the way for the entry of the streptococcus into the blood stream. What this may do in a short time is graphically shown in Case 2 (Part I.) of our paper,[1] and those who recall cases during the pidemics of 1918–20 will probably remember ny similar instances. However unwise it may be draw conclusions from a single case, it seems ossible in Case 2 that the serum may have prevented ath in the early period of invasion. It has been stomary to look upon a moderately high tempera- re (104°–105°) in infection as a good prognostic gn, but Fig. 2 shows that, though it may give n indication of the quality of the resistance the ody is making, it bears no relation to the quantity, we accept the leucocytic response as a true index f resistance, as I believe we can. As has been shown efore, most cases of uncomplicated streptococcal pticæmia have a good polymorphonuclear leuco- tosis, and serum is not required, but where the efences of the body have been already hampered—hether by acute infections such as influenza or phoid, or by such chronic diseases as diabetes or ephritis—then serum has a place in therapy.

The reason for dealing with this point at length that previously I have tried to show the inefficacy antistreptococcal serum in septicæmia, and partly answer some recent criticisms made by A. H. G. urton and A. R. Balmain,[3] who insisted that anti- carlatinal serum benefited a case of broncho-pneu- onia with pericarditis complicating streptococcal pticæmia, and supported their plea for its employ- ent by Cadham's [4] figures: that 45 out of 56 cases f septicæmia (mostly streptococcal) recovered under rum therapy. Careful reading of this paper shows hat the method employed by Cadham was to give uman serum and 2–5 c.cm. of immune rabbit's erum on alternate days, and Cadham also remarks: 'The beneficial results occasionally obtained in psis following the use of scarlet fever antistrepto- occic serum touches the live question of the relation f the toxins from the various strains of streptococci o one another." Although Cadham's figures are riking, I have the impression that his cases were ot unselected, but as no details are given it is not ossible to be certain. Burton and Balmain also note Comber's [5] figures to show that antiscarlatinal rum gives good results in streptococcal septicæmia, ut they do not mention that all her cases were of carlet fever. There is no denying the good results f antiscarlatinal serum in scarlet fever cases, but see little reason for its use as a routine in uncom- licated streptococcal septicæmia, although the bsence of the leucocytic response may give the orrect indication for serum therapy in doubtful ases. But whether serum be given or not, success ill not be achieved if devoted nursing, hydro- herapy, the expectant treatment of metastatic bscesses, and as complete rest as possible are not llowed to play their part.

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NEW THEATRE AT KESWICK HOSPITAL.—Sir John andles recently opened a new theatre which he has given Keswick cottage hospital at a cost of £8000. It is a emorial to the late Lady Randles, and is named after her.

PAYING PATIENTS AT CANTERBURY.—At the Kent d Canterbury Hospital a large temporary ward for ildren has been erected, and the accommodation s vacated is to be used for paying patients. The pening ceremony was performed by Lord Northbourne ntly.

Clinical and Laboratory Notes

A CASE OF NEPHROSIS

WITH A NOTE ON INFECTION AS A POSSIBLE CAUSE

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THE term nephrosis was originally suggested by Müller [1] to distinguish between degenerative and inflammatory changes in the kidney. Later it was applied by the clinician to differentiate a group of cases exhibiting certain special features—namely, intense albuminuria, gross œdema, low plasma proteins and high blood lipoids, and the absence of hæmaturia, hypertension, retinitis, and nitrogen retention. Such cases were placed in a definite group by Epstein,[2] Munk,[3] and Volhard and Fahr.[4] This dual definition has resulted in a very considerable confusion. The confusion has been increased by two other factors. From the pathological point of view, most examples of tubular degeneration show some evidence of inflammatory glomerular change, while from the clinical point of view many cases of true diffuse glomerulo-nephritis may show, over long periods of time, a clinical picture consistent with a diagnosis of nephrosis as based on the criteria quoted above. The situation has been further complicated by the necessity of distinguishing amyloid disease of the kidney and apportioning it a place in the classification of renal disease.

In spite of these difficulties the term has persisted. The reason for this persistence has been, not its pathological usefulness, which, owing to the varied character and ætiology of renal degenerations, has proved largely illusory, but its usefulness to the clinician to designate a group of cases recognised by him as a definite clinical entity. These cases, which had formerly been included among cases of diffuse glomerulo-nephritis under the headings sub-acute nephritis, chronic parenchymatous nephritis or hydræmic nephritis, urgently required separation and definition. This has now been achieved by the introduction of the term "nephrosis" or "lipoid nephrosis." A similar clinical picture arising in a patient suspected of amyloid disease may be designated "amyloid nephrosis." Though difficulties of differentiation in given cases between nephrosis and the nephrotic type of glomerulo-nephritis are bound to arise, they do not invalidate the use of the term. A careful watch for the occurrence of hæmaturia, hypertension, retinitis, and signs of deficient renal function will assist in the admittedly difficult differentiation.

Nephrosis as defined above is a relatively rare condition. The case here described is believed to be an example. It is considered worthy of recording because it has been carefully observed and because it may present some evidence concerning the unknown ætiology of the condition.

CASE RECORD

A married man, aged 49, was admitted to the London Hospital on April 17th, 1931. (No. 30567.)

Ten weeks previously he had had an attack of influenza; he had suddenly felt ill and tired, with a slight cough, headache, and fever, associated with profuse sweating. He remained in bed for ten days and did not return to work for a further period of ten days. After having been back at work for about three weeks he began to notice swelling of his legs towards the end of the day. This got worse during the next few days and spread up to his back. He saw his doctor who reported his urine to be "solid with albumin." At this time, apart from feeling a little tired, he complained of no symptoms other than the swelling. He had never noticed any change in the colour or quantity of his urine.

He had contracted syphilis thirty years ago and been treated with medicine. Nine months before admission he attended the Royal London Ophthalmic Hospital for failing vision. He was given seven injections of N.A.B. (novarsenobillon) at weekly intervals. Since 1924 he had suffered from frequent attacks of "nasal catarrh."

EXAMINATION AND INVESTIGATIONS

He was a well-developed man with slight pallor of the skin and mucous membranes. There was no puffiness of the face, but well-marked pitting œdema over the feet, legs, and to a lesser degree over the lumbar *region*. The heart was not enlarged. There was no vascular hypertrophy. Blood pressure 115/80. At no time during the whole course was any hypertension observed. A few scattered rhonchi were heard in both lungs. There was no ascites. The kidneys could not be felt. The pupils reacted to light somewhat sluggishly. Examination of the fundi oculi revealed old neuroretinitis shown by the presence of scattered areas of dust-like pigmentation in both retinæ. This was considered to be syphilitic in origin.

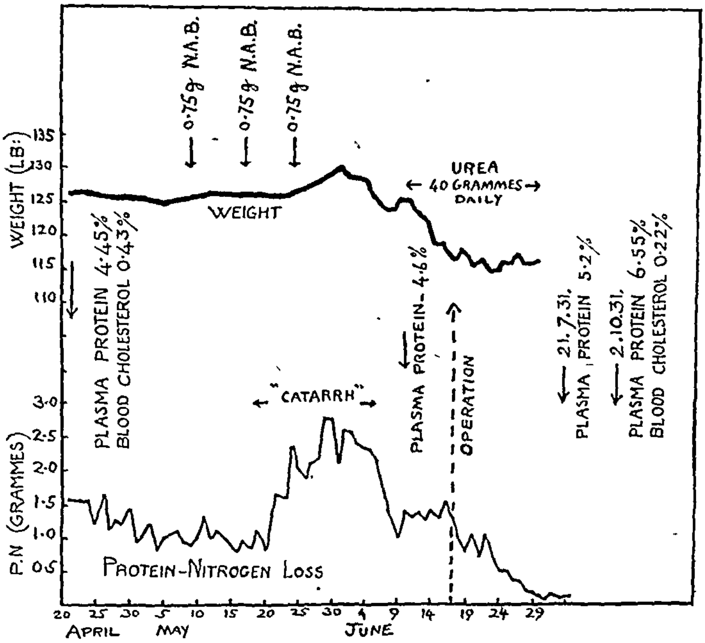

Chart to illustrate progress of case.

At this time investigations showed the following:—

Urine: S.G. 1022. Acid 2/3 volume of albumin. Daily volume 1000–1500 c.cm. Deposit, occasional leucocytes and red cells. Culture, streptococci.

Renal function: Blood-urea 0·022 per cent. 1st vol. 71 c.cm. 2nd vol. 69 c.cm. Phenolsulphophthalein 40 per cent., 20 per cent. Urea excretion, 0·84 per cent., 0·84 per cent. Standard clearance 83·20 per cent. of N., 81·90 per cent. of N.

Plasma protein, 4·45 per cent. Blood Wassermann reaction, positive. Blood cholesterol, 0·43 per cent.

Blood count: Red cells, 5,000,000; hæmoglobin, 70 per cent.; colour-index, 0·7; leucocytes, 11,200; polymorphs, 68·5 per cent.; eosinophils, 3·0 per cent.; small lymphocytes, 10·5 per cent.; large lymphocytes, 13·5 per cent.; large hyalines, 4·5 per cent.

COURSE OF ILLNESS

This case was observed in hospital for a period of nearly 14 weeks. As will be seen from the accompanying chart there was little change either in weight or in protein output during the first five weeks. His general condition remained unchanged. He then began to complain of "nasal catarrh." There was nasal obstruction, general malaise, and increase of œdema. Vomiting occurred on two or three occasions. There was no fever. This exacerbation lasted about ten days, and towards the end there was a definite diminution in the 24-hourly volume of urine to 325 c.cm. There was also a marked increase in protein loss.

He was seen by Mr. Norman Patterson, who found masses of polypi in both sides of the nose. Radiography showed no abnormality of the nasal sinuses. The polypi were removed under local anæsthesia on June 17th, 1931. Within the next few days his general condition began to show a steady and definite improvement which continued up to the time of his discharge on July 22nd, when there was no œdema and only a trace of albumin in the urine. During the whole time in hospital he was kept on a moderately full but strictly salt-free diet, with fluid up to two pints daily. Urea, 20 g. twice daily, was given over the period of June 10th–29th. The duration of the illness was about 18 weeks.

Six weeks after discharge from hospital he was back at work and feeling quite well. There had been no recurrence of the œdema and the urine was clear; the plasma protein and blood cholesterol had returned to normal limits (plasma protein, 6·55 per cent.; blood cholesterol, 0·22 per cent.). He was last seen on March 9th, 1932. He then stated that he felt perfectly well and had not noticed any further nasal obstruction since his operation. There was no œdema and the urine was clear.

DISCUSSION

The accompanying chart shows the sequence of events in the progress of the case. It illustrates the relationship of the recrudescence of the "nasal catarrh" with both the increase in weight due to œdema and the increase in protein output.* After the attack had subsided these returned to their previous levels. At this point however the patient was given 20 g. of urea twice daily. This was followed within 48 hours by a steady fall in weight, but no immediate diminution in the protein output. This latter only began after the removal of the polypi.

As an explanation of the course of this case there would seem to be several possibilities—namely:—

(1) That this was a case of nephrosis pursuing a relatively benign course with ultimate recovery and remaining uninfluenced by any treatment. This possibility must be admitted as such cases have been observed particularly in children.

(2) That the improvement was due to the administration of urea. Excellent results from the use of this drug have been reported by Volhard, Maclean, Wordley,[6] and others. An immediate fall in weight followed the administration of urea in this case. This was accompanied by a diminution in œdema and an increased urinary output, but there was no change in the protein output until the loss in weight had practically ceased.

(3) That this was a case of syphilitic nephrosis. Such cases were described by Munk,[3] but they occurred almost exclusively during the secondary stage of lues. Isolated cases have been reported as occurring years later. One of the cases of nephrosis reported in Russell's [7] series, a man aged 47, had been given about 15 injections of N.A.B. together with mercurial treatment for syphilis contracted 18 months before death, the Wassermann reaction being subsequently negative. Hurst [8] and Dowling [9] have reported cases of "syphilitic nephritis" occurring many years after the primary infection. Some of these responded to treatment with silver salvarsan and iodides in a very remarkable way. In the present case the primary lesion occurred 30 years

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* The protein output was determined by daily estimations by the method of Kerridge.[4]

before, seven injections of N.A.B. were given nine months ago, and three injections of N.A.B. as shown in the chart. The Wassermann reaction was positive. It is difficult to believe that these last three injections were in any way connected with his recovery.

(4) That the nephrosis bore a definite relationship to the infection. Cases of chronic nephrosis in children are described by Clausen.[10] He believes them to follow infection with the *Staphylococcus aureus*, particularly of the paranasal sinuses. In Clausen's cases, however, it is not easy to be sure that all are true nephroses and some not nephrotic types of glomerulo-nephritis. In Bennett's [11] three cases, one was preceded by a chill. One of Russell's [7] cases was initiated by coryza, earache, and headache. In his discussion of "genuine nephrose" Volhard [12] states his belief that all such cases are really due to a chronic infection, could its site be determined.

Such a view of the ætiology in the present case is supported in the first place by the fact that the onset was preceded by a generalised infection. Secondly, by the relationship of the recrudescence of the infective process with the renal manifestations. Thirdly, by the culture of streptococci from the urine on two occasions. Lastly, by the very striking clinical improvement and corresponding diminution in protein loss which was observed to follow the operation. This case again demonstrates the possibility of complete recovery in patients with nephrosis, even after the persistence of the disease for many weeks.

In conclusion I have to thank Prof. Arthur Ellis for his kind permission to publish this case, and Mrs. P. Tookey Kerridge, Ph.D., for allowing me to make use of her observations on the protein output.

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AGRANULOCYTIC ANGINA
COMPLICATING HODGKIN'S DISEASE

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This case is reported, first, because the complication of agranulocytic angina in Hodgkin's disease is an extreme rarity; secondly, because of the difficulty that was experienced in diagnosing the local condition owing to its resemblance to an ordinary diphtheritic membrane; and lastly, because I am not aware that a case has ever before been reported in a child; the condition nearly always occurs in middle-aged women.

PRIMARY HODGKIN'S DISEASE

The patient, a girl of 7 years, was admitted to King's College Hospital in July, 1930. Her past history consisted of measles two months previously, followed by a swollen neck. On admission there was a large mass of glands on each side of the neck, and discrete enlarged glands in both axillæ and groins. There was also evidence of some enlargement of the mediastinal glands. The spleen was not palpable. Lymphadenoma was diagnosed, and X ray treatment was started on August 5th, 1930. One local application to the enlarged glands was given nearly every week for a year, the dose varying from ¼–½ B.mm. In a few weeks the glands became smaller, and by the end of September they had practically disappeared. Other treatment consisted of liquor arsenicalis ♏ 2½ t.d.s., which was started on Sept. 1st and was continued on and off for nearly a year.

At the beginning of August, 1930, a blood count showed:—

Red cells	5,780,000	Polymorph. ..	56·8 %
White cells.. ..	1,800	Lymphocytes ..	27·6 %
Hæmoglobin ..	95 %	Eosinophil ..	15·2 %
Colour-index ...	0·83	Mononuclear ..	0·4 %

In October a leucocyte count showed leucocytes, 3000; polymorph., 57·2; lymphocytes, 36; eosinophil, 4·4; basophil, 0·8; and mononuclears, 1·6 per cent.

By this time the glands of the neck were normal, and the child was well enough to be discharged. She remained fit until the end of December, when she looked pale and run down and had a little enlargement of the submaxillary glands.

In February, 1931, the axillary and submaxillary glands were slightly enlarged, but in April they became smaller again and her general condition improved. In May, however, the spleen was palpable for the first time, and in June and July fresh enlarged glands frequently appeared in the neck, axillæ, and groins. They always disappeared with the local X ray treatment, but as soon as one group went a fresh group appeared elsewhere. All this time the child was really quite well, and was attending school.

AGRANULOCYTIC ANGINA

On Sept. 10th, 1931, the child developed a cough with pyrexia; generalised rhonchi were heard all over the chest, and there was some diminution of air entry at the right base. Two days later she developed a dirty white patch on the right anterior faucial pillar, and on Sept. 14th she was obviously ill and toxic, with a temperature of 103° F.

Her breath was foul, and there was a dirty white membrane the size of a shilling on the faucial pillar. A clinical diagnosis of diphtheria was made (although a swab taken on the 12th showed no Klebs-Löffler bacilli), and 30,000 units of antidiphtheritic serum were given intramuscularly. At this time her cervical glands were slightly enlarged and rather tender. She had a small gland below the right clavicle, and her spleen was just palpable. There were no other physical signs. The tonsils were healthy and her teeth in good condition.

On Sept. 16th the membrane was slightly more extensive. It was not particularly painful. Her cough was better, but her general condition was unchanged and her temperature was 103°. Two days later she was more toxic, and her breath was very offensive. By this time three throat swabs had all proved negative for Klebs-Löffler and Vincent's organisms, but a mixed infection of staphylococci, streptococci, and pneumococci was present in the third. It was then felt that the condition might be a streptococcal angina. On Sept. 21st her general condition was deteriorating, the temperature still being 103°–104° F. The affected area in the throat was definitely larger than on admission, its diameter being almost an inch. The membrane was beginning to separate, leaving an ulcerated and hæmorrhagic base. The membrane had disintegrated by Sept. 23rd, leaving a foul, stinking ulcer from which there was an occasional ooze of blood. A few minute petechiæ were noticed on the right forearm.

On Sept. 25th a blood count was done and gave the following astonishing result:—

Red cells	1,180,000	C.I.	1
White cells..	less than 100	Polymorph. ..	12·5 %
Hb.	24 %	Lymphocytes ..	87·5 %

The polymorphonuclears were stained by the Shato and Shoji benzidine method, and showed considerable granulation.

The diagnosis of agranulocytic angina was then made. A blood transfusion of 300 c.cm. was given immediately, and another of 430 c.cm. on Sept. 27th. Neither caused any improvement in the local or general condition. The throat became very foul and the ulcer more extensive, and some hæmorrhage occurred from it. She then developed a terminal broncho-pneumonia and died on Sept. 29th. Throughout the illness the temperature never dropped below 101° F., and it was usually 103°–104° F. The final blood count, done on the day before she died, showed :

Red cells	1,220,000	Platelets	45,000
White cells..	less than 50	Polymorph. ..	44 %
Hb.	22 %	Lymphocytes ..	56 %
C.I.	0·9		

The blood-Wassermann was negative, the van den Bergh normal, and a blood culture taken on Sept. 22nd was sterile after eight days' incubation.

Treatment.—On Sept. 14th she had 30,000 units, and on Sept. 16th 20,000 units of antidiphtheritic serum. On Sept. 18th 10 c.cm. of polyvalent antistreptococcal serum were given; on Sept. 20th 10 c.cm. of antiscarlet serum, and on Sept. 23rd 10 c.cm. of antipneumococcal serum. An arsenical throat paint was also used for the first week of the illness. No improvement, even temporary, could be detected as a result of any of this treatment.

POST-MORTEM REPORT

The autopsy verified the diagnosis of Hodgkin's disease.

There were slightly enlarged glands in the submaxillary region, along the right main bronchus, and along the upper border of the pancreas. All these glands were firm, smooth, and dark red or plum-coloured. Microscopically the normal anatomy of the gland was found to be replaced by a diffuse cellular infiltration, the chief cell being a moderately large round cell with a big and intensely dark nucleus, the other cells being pale endothelial cells. One or two immature Hodgkin giant cells were also seen. The glands were clearly lymphadenomatous, with superadded acute congestion. The spleen was three times its normal size, and looked like an infective spleen. There was hyperplasia of the splenic pulp, which contained many plasma cells and large round mononuclear cells, probably Hodgkin cells. No granular leucocytes were seen at all. Petechiæ were seen on the pericardium and in the kidneys. The bone-marrow from the middle of the tibia was red in colour. Megaloblasts and red cells were present, but there was not much evidence of myelocytic formation. There were also multiple erosions of the mucous membrane of the alimentary canal, a feature which has been noted before in agranulocytic angina.

COMMENTARY

This case is an example of the type of agranulocytic angina described by Schultz[1] in 1922, and believed by him to be a specific entity. The sudden onset of acute illness, the buccal inflammation and ulceration, the high fever and toxæmia, and the fatal termination are all typical of the disease. The condition is very rare (no other case can be traced in the records of this hospital from 1915–1931), and the occurrence of the disease in a child already suffering from Hodgkin's disease is probably unique.

A condition of agranulocytosis, however, without the sudden onset of a severe illness with inflammation and pyrexia, is not very uncommonly associated with aplastic anæmia, and is a sequel of bone-marrow failure.[2] The causes are those of aplastic anæmia in general, amongst which may be mentioned toxins from a septic focus, toxic substances (such as benzol) which depress the bone-marrow, and the use of radium and X rays in inappropriate doses.

The problem is whether agranulocytic angina is a primary and specific throat infection giving rise to the blood condition (as Schultz thought), or whether there is a pre-existing condition of agranulocytosis which would render the body particularly inefficient in dealing with a chance infection in the mouth or elsewhere. If the latter view is correct, it is surprising that agranulocytic blood counts are not more often found in the ordinary acute general or local infections such as pneumonia or carbuncle; for this type of infection occurs much more commonly than severe buccal infections, and presumably our primary agranulocytic patient would be just as liable to contract them as he would an ulcerated throat. Yet it is a fact that agranulocytic blood counts are very rare in these infections and, when they do occur, are always thought to be associated with a very virulent organism which inhibits the normal reaction of the body; in these patients there is a low temperature, not the high fever found in agranulocytic angina. The fact that such blood counts are not more often found is some evidence in favour of a specific buccal infection. Another argument for this hypothesis is that a primary leucocytosis with a shift to the left of the Arneth index is occasionally found in the early stage of agranulocytic angina.[3] This leucocytosis has presumably occurred before the specific toxin has become potent enough to depress the granulopoietic powers of the marrow.

Most of the recorded cases of agranulocytic angina have been in middle-aged women, and this fact may have some bearing on the problem, but the only suggestion that has been put forward[4] is that a certain degree of leucopenia with relative lymphocytosis is found in healthy women more often than in men, and that this might develop into agranulocytosis if suitable conditions prevailed. It is by no means certain, however, that women do possess these blood pictures more often than men.

The present case does not seem to give any clues. There was certainly some leucopenia soon after the diagnosis of Hodgkin's disease was made, but the percentage of granulocytes was above rather than below normal. This was, however, a year before the onset of the angina. The prolonged X ray treatment may have had a depressing effect on the bone-marrow, and had a blood count been made just before the acute illness it might have been agranulocytic. Dr. Parkes Weber, who has been kind enough to read through this paper, thinks that the X ray treatment probably played an important part in producing agranulocytosis.

My thanks are due to Prof. G. F. Still for permission to publish this case, and to Dr. W. P. H. Sheldon for criticism and advice.

REFERENCES

1. Schultz, W.: Commun. to Verein fur innere Med. und Kinderheilk., July 3rd, 1922.
2. Weber, F. Parkes: The Practitioner, 1931, cxxvii., 430.
3. Piney, A., and Wyard, S.: Clinical Atlas of Blood Diseases; London, 1st ed., p. 46.
4. THE LANCET, 1930, ii., 1405.

HOSPITAL LIBRARIES.—The British Red Cross and Order of St. John Hospital Library is now supplying over 300,000 books and magazines to more than 1800 hospitals in England and overseas. Mr. Hagberg Wright, the chairman, has resigned and is being succeeded by Sir Theodore Morison.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—The new and chief feature of this hospital's work during the past year has been the development of research and the Rockefeller Foundation has made a grant for this purpose of 15,000 dollars annually for seven years on condition that approximately 18,500 dollars annually can be obtained from other sources. The number of patients attending in all departments has exceeded that in preceding years. The total expenditure for the whole institution amounted to £37,871 and the total income was £35,543, an increase of £12,383 on the previous year.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF LARYNGOLOGY AND OTOLOGY

THE summer meeting of these sections was held on June 10th and 11th at the Portsmouth Eye and Ear Hospital Southsea. On the first day Mr. WALTER HOWARTH, President of the Section of Laryngology, took the chair and a discussion on

Referred Pain

was opened by Mr. LIONEL COLLEDGE (London): John Hunter, he said, noted that suppuration in the antrum caused pain in the frontal sinus, and this kind of pain, confined to the trigeminal, was common. Thus, a patient had acute pain in the frontal sinus; the nose seemed normal, and the removal of an incisor tooth cured the pain immediately. Pain in the teeth often arose from the antrum; again, pain was often referred to the wrong tooth, though not across the middle line. Sometimes pain was referred to an ear which was not the seat of either inflammation or deafness. The source of referred pain in the ear was usually in the pharynx—e.g., calculus in the tonsil, epithelioma of the pharynx, or defective teeth. The classical example was an unerupted or partially erupted wisdom tooth, though any molar might cause pain in the ear, and even a bicuspid tooth might do so. Unerupted teeth could cause remarkable reflex symptoms.

One patient felt pain in the right mastoid process, which was tender; there was functional deafness in the right ear and left hemianæsthesia, in addition to pain in the face. The patient's dentist noted that one of her upper bicuspids was a milk tooth, which lay horizontally in the jaw, and when that had been removed her symptoms disappeared.

Other causes of pain in the ear were empyema of antrum or of the sphenoidal sinus, and malignant disease of the back of the tongue. Stated generally, a lesion in the area of distribution of the trigeminal nerve, of the glossopharyngeal or of the superior laryngeal branch of the vagus could cause pain referred to the ear.

Mr. Colledge related two cases to show how, on occasion, referred pain might prove of vital importance.

A boy, aged 14, had severe aural pain, but there was nothing to be seen wrong with the ear. At the autopsy pus was found around the sphenoidal sinus.

A man had an epithelioma in the lateral wall of the pharynx, low down. For six months he was treated by an aural surgeon for pain in the left ear, though that organ seemed normal in every respect. The operation, when at last it was undertaken, had to be very extensive, but the man still remained well after three years.

Why, Mr. Colledge asked, should the nervous system make this error in allocating the pain? Henry Head believed that pain was felt in the thalamus, and was analysed in the cerebral cortex. The speaker's suggestion was that when pain was referred wrongly it was to an area accustomed to experience pain; in other words, owing to lack of education in this respect, the natural perceptive area was not responsive, and there was a transfer of perception to a region accustomed to such manifestation.

Mr. ERIC WATSON-WILLIAMS (Bristol) said that when earache was complained of, and the ear was normal, the cause was problematical and had to be hunted for. It might be due to temporo-mandibular arthritis, or to mumps. The real trap lay in cases in which an ear was defective yet was not the cause of the pain. He had had two cases of vagus herpes oticus at the onset of lobar pneumonia. The former was very apt to simulate otitis media.

One of these cases was that of a boy, aged 14, who for three days had had severe pain in the ear. He had just had a cold, and when Mr. Watson-Williams saw him he was worse; he was giddy and was vomiting; his temperature was 104·4° F., and the respiration-rate 38. There was a slight sanious discharge from the ear, and extreme tenderness at the tip of the mastoid. The patient had been prepared in the theatre for a mastoid operation, but the case looked like one of pneumonia, and there were crepitations at the base of the lung. Operation was not performed, and 36 hours later the boy had typical pneumonia. There was a ruptured vesicle on the drum, which looked like a perforation.

When no local cause of pain could be found in the ear one should examine mouth, nose, pharynx, and larynx. Otitis media occurred in association with cancer of the nasopharynx and the Eustachian tube, and might be misleading. Sphenoidal sinusitis could easily be mistaken for otitis media, expecially in young subjects. Sometime unexplained referred pain was experienced in intracranial conditions; meningitis might cause pain in the ear, and this might be the first, indeed the only, localising sign. Finally, it was possible to meet with purely functional earache, though that was not strictly "referred pain."

Dr. PATRICK WATSON-WILLIAMS (Bristol) spoke of the importance, when a sinus was involved, of sucking out the contents and so relieving that tension which was so potent in determining the spread of infection. In cases in which pain was felt in an ear and nothing was seen there to account for it, the teeth and nose should always be examined, the latter by endo-rhinoscopy. Even when trouble was found in the ear, examination of the nose should never be omitted.

Mr. C. A. SCOTT RIDOUT (Southsea) laid emphasis on impaction or defects of teeth and on infection of the antrum in cases of pain referred to the ear; radiography, he said, was very important. He had seen several cases of functional ear pain, all in women of about 30 years of age. Some of those patients had "vacuum frontal sinusitis."

Dr. D. R. PATERSON (Cardiff) put in a plea for the recognition of the work on referred pain done by Prof. Francis Dixon, when professor of anatomy at Cardiff. He also pointed out that tonsils had often been removed, though healthy, because they were thought to be the source of aural pain, and that this had persisted nevertheless.

Mr. JOHN O'MALLEY (London) spoke of a patient whom he saw six weeks after having a tooth removed.

The extraction had been immediately followed by bleeding from the nose, and a day or two later by discharge of pus from the nose. Then the patient had pain in the roof of the nose and across the face into his ear, and this merged into the typical pain of frontal sinus trouble. Mr. O'Malley washed out a considerable quantity of pus from the antrum and the next day all the pain had disappeared.

Other speakers took part in the discussion and Mr. Colledge replied.

Polypi

Dr. G. SCOTT WILLIAMSON (London) read a paper on the Genesis of Polypi. It appeared, he said, that there must be some reason which made it inevitable that what were simple inflammatory swellings in other regions became polypoid in the nose and also in the cervix uteri. The chief factor was, he thought, the remoteness of the main blood-supply from its ultimate distribution. It was apt to be forgotten that hypertrophy took place in the various active glands of the nose and throat, as in other regions of the body. When hypertrophy of a structure had to take place within a limited area, as in the nose and throat, the manifestation was a polypoid one. Experimentally, an irritation which in an unrestricted area caused a simple sessile expansion of mucous membrane, produced in a confined zone polypoid formation. In 40 per cent. of cases of polypus examined there was found at the root of the polyp an adenoma or an adenoid hypertrophy—i.e., the primary lesion was apparently an overgrowth of the mucous glands or the superficial glands of the mucous membrane; the polyp was a large myxoid mass superimposed on an adenomatous formation. It was found experimentally that one had only to reduce the vascular supply of any hypertrophying gland to change its state from hypertrophy to hyperplasia, and once the latter was set up, the condition was on the high road to malignancy. In 17 cases he had been able to trace these stages.

Mr. W. M. MOLLISON (London) said he recognised, clinically, two types of polypi: (1) a small and rare kind seen in patients subject to hay-fever or spasmodic rhinorrhœa; these appeared high up in the nose, and he considered they were of mechanical origin. (2) The common type of polypus, which he had hitherto regarded as infective though he did not feel so certain after hearing Dr. Scott Williamson's paper. In addition there was a type of polypus associated with a good deal of pus—an indication of a change from a mild to a severe infection. He had not found any confirmation of Dr. Williamson's statement that many polypi might become malignant owing to hyperplasia having set in; practically never had he seen an ordinary polypus become malignant. His latest ideas regarding polypi had been upset by a case he saw recently.

The patient was a man aged 52. He had never had any functional nasal obstruction, but he began to complain of symptoms about the right antrum. At the age of 11 he had fallen from a height flat on to his face, severely distorting it and deflecting the septum to such an extent that one could not see into his nose; yet he had but little functional disability. Radiography showed in the antrum a smooth bulge from the right inferior wall of the antrum. The nasopharynx Mr. Mollison found to be normal, and there had been no nasal secretion. The antrum was opened through the canine fossa and in it there was a polypus, and nothing wrong with the mucous membrane except in that localised patch. Mr. Mollison carried out a submucous resection, and there was nothing behind it in the nose.

Mr. F. C. W. CAPPS (London) agreed with Mr. Mollison about the extreme rarity of malignant degeneration in polypi.

Dr. WATSON-WILLIAMS agreed that the clue to the causation of polypi was the anatomical difficulty of maintaining the lymph circulation. His own explanation of the cause of the ordinary nasal polypus with a narrow pedicle was that an infecting agent penetrated the epithelial layers and so got into the submucosa. He had been able to demonstrate cocci in the lymph spaces where an obstructive endolymphangitis was set up, and so an obstruction supervened. The fluid was thus exuded into the cellular spaces, and the result was intense œdema and protrusion from the surface. Chemical or mechanical irritants were also culpable.

Mr. A. LOWNDES YATES said a point of practical importance in this connexion was that the mucous membrane hypertrophied in length, breadth, and thickness, and so there was not room for expansion, and as the pressure was lowest in the lymphatic vessels that was the part cut off. In operating it was important to aim at giving room for the hypertrophy.

Inflammatory Conditions of the Ear

Mr. HAROLD BARWELL (London), introducing a discussion on Types of Inflammation causing Inflammatory Conditions of the Ear, confined himself to the frankly acute affections. What were the paths by which the inflammation might extend from one region to another? Spread by lymphatics or blood-vessels was so rare that it need not be considered in this connexion, though the ear could possibly be involved in the course of a septicæmia of nasal—as of any other—origin. Usually the inflammation reached the ear by continuity along the mucous membrane through the Eustachian tube or by discharges from a septic focus in the nose being blown through the Eustachian tube—the latter being, in his view, far the commoner. Violent or improper blowing of the nose was, he believed, the most important of all causes of aural inflammation arising from nasal inflammation. Three factors which might influence the extension of inflammation from the nose to the ear were: (1) the situation of the nasal lesion; (2) the previous condition of the ear and the Eustachian tube; (3) the virulence of the infecting micro-organisms. The last-named he regarded as much the most important. Apart from general virulence, some strains showed a special tendency to attack the ears.

Mr. T. H. JUST (London) believed that a clear-cut nasal infection, without any disease or abnormality in the nasopharynx, scarcely ever caused aural suppuration. In the cases in which nasal suppuration gave rise to aural suppuration he held that the infection was so severe that the whole mucosa of the upper air-passages was infected at the same time, and, because some stuffiness was present, patients localised the trouble to one side. The most common organism infecting the ear was the *Streptococcus pyogenes*; next came the pneumococcus, staphylococcus, and *B. influenzæ*; others were rare. Chronic antrum and ethmoid infection, per se, were rare causes, while frontal sinusitis was still rarer. Overlooked sphenoidal suppuration sometimes caused persistence of a chronic suppuration in the ears. Otitis media occurring simultaneously with a homolateral antrum infection always developed into an acute mastoid infection. From the aural point of view, an acute ethmoid condition was less virulent. Sinusitis, especially of the antrum, during an influenza epidemic, unless dealt with as conservatively as possible, led to acute otitis media and usually to drainage of the mastoid.

Mr. T. B. LAYTON (London) submitted a classification of infections of or through the upper respiratory tract, according to the patient's liability to develop an osteomyelitis of the mastoid bone due to the hæmolytic streptococcus. The most serious and anxious cases in all otology were those associated with influenza, in a general way, and there were two types of case which he dreaded. One was a flaming mastoid condition supervening on an attack of measles; the other an acute mastoid added to an influenzal or scarlatinal otitis media. Mr. Layton developed his idea of a filtrable virus.

Mr. E. MUSGRAVE WOODMAN (Birmingham) agreed that acute infections in the ear were often caused by faulty nose-blowing or by heavy douching of the nose.

Mr. GAVIN LIVINGSTONE (Seaford) demonstrated a model which he had made to illustrate the Nasal Air-way in the New-born Child.

Saturday was devoted to the examination and discussion of clinical cases, under the chairmanship of Mr. W. M. MOLLISON, President of the Section of Otology. Dr. J. R. B. HERN (London) showed a film illustrating a case of gross deflection of the trachea by a large tumour, and the attempt to remove it.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

At a meeting of this society on June 9th, with Dr. O. H. WOODCOCK, Vice-President, in the chair. paper entitled

ndividual Psychology and the Children's Clinic

was read by Miss RAYNER. She pointed out that a adical change in the upbringing of children had aken place within the last 100 years. The more nderstanding attitude of mind which had replaced he older methods of suppression had found practical xpression of recent years in the formation of child uidance clinics. Here the child was regarded as a nit in relation to the whole—whether he was good r bad depended largely upon his educators. The work of the clinic began where the child's natural ducators had failed to give him the understanding nd confidence required for courageous development. For the best results, therefore, the education and e-education of the educators must go hand-in-hand with that of the child. Where the parents could not be brought to coöperate, the child must either be immunised against them, or be removed from home until he was sufficiently self-reliant not to all back into his old ways of reaction. The child rought to the clinic was one who had not been rained to stand alone. His useless, antisocial behaviour was dictated by his underlying fears, and treatment was directed to the remedying of the defect in social feeling which nervous symptoms or delinquency betrayed. In this way healthy expression replaced a warped outlook upon life, egocentricity and undue authoritarianism were broken down, and the child was guided into freedom, self-reliance, and responsibility.

The CHAIRMAN said that he had been struck with the idea of the "open clinic" described by Miss Rayner. Dr. THOMAS LAWSON remarked that the adult had left the environment in which he acquired his neurosis, the child was still in it.—Miss N. K. HUNNYBUN thought that there might be some difficulty in connexion with the open clinic. The audience might be too critical, and the parents might be antagonised.—Dr. F. G. CROOKSHANK asked whether, in the inculcation of social feeling and encouragement in the clinics, the boys and girls were led to strive for their respective goals, or for the same one.—Miss BAINE said she had found that parents did not mind bringing up their problems in discussion groups, and that this procedure gave encouraging results.

Miss RAYNER said that in the open clinic the skilled and sympathetic psychiatrist was able to promote a friendly attitude on the part of the parent, and the audience did not tend to be critical. The question of the respective goals of the boy and girl did not arise in the clinic. The patients' difficulties were an indication of discouragement, and were regarded from this point of view.

REVIEWS AND NOTICES OF BOOKS

Anatomie pathologique

By MAURICE LETULLE, late Professeur Honoraire à la Faculté de Médecine de Paris. With the collaboration of L. NATTAN-LARRIER, Professeur au Collège de France; A. JACQUELIN, Médecin des Hôpitaux de Paris; L. DUCLOS, Ophtalmologiste Adjoint de l'Hôpital Chirurgical Gouin; and E.-P. NORMAND, Conservateur du Musée d'Anatomie Pathologique Générale Maurice-Letulle (Hôpital Boucicaut). Paris: Masson et Cie. 1931. Three volumes. Pp. 2346. Fr.600.

THESE three large and beautifully reproduced volumes are the final contribution to pathology of n author of great repute. Prof. Letulle's death occurred within a few weeks of his having completed he manuscripts, and the task of publication fell to is son Raymond Letulle in collaboration with the other authors. The work is the fruit of half a century f laborious research and observation. Prof. Letulle hroughout his long and active life as a teacher has kept foremost in his mind the importance of eaching the student to visualise at the bedside the hidden pathological changes occurring in the patient. n this book he has striven to show the active processes occurring in living tissues rather than static conditions evealed by museum specimens. No language is etter suited to this purpose than French, and Prof. Letulle uses it well. His descriptions are delightfully raphic and concise, his teaching dogmatic and ntrammelled by doubts or exceptions. Under his uidance pathology becomes simple, perhaps too imple. Confusing problems of the underlying nature f pathological processes are for the most part avoided, nd such notes on pathology as are introduced are ketchy. The work records essentially the observations and experience of Prof. Letulle; few references re made to the researches of others. For those who know enough to discriminate the work will provide an enormous fund of valuable information on morbid anatomy. The collection of beautiful drawings of microscopical preparations here included were executed by A. Karmanski, who worked for a large number of years with Prof. Letulle. Their inclusion makes this work a very complete atlas, the pictures being so well reproduced as to compensate for the occasional defects in the text.

A Handbook of Ocular Therapeutics

By SANFORD R. GIFFORD, M.A., M.D., Professor of Ophthalmology, Northwestern University Medical School, Chicago. London: Henry Kimpton. 1932. Pp. 272. 15s.

THIS book deals with the non-operative treatment of lesions of the eyes. Apart from local treatment—e.g., by drops—such measures as the administration of tuberculin, phototherapy, X rays, radium, and non-specific protein therapy are recommended for various conditions. Prof. Gifford believes strongly in milk injection for gonorrhœal ophthalmia whatever the age of the patient. For ophthalmia neonatorum he naturally and rightly lays stress on frequent efficient irrigation with a non-irritating fluid, but in his view the next most important measure is the use of foreign protein injections. One c.cm. of whole milk boiled for four minutes as an intramuscular injection, repeated every third day with an increasing dose according to the febrile reaction produced, is his prescription for every case, since he believes it to be impossible to pick out in advance the exceptional cases which do not get well with irrigation alone. Prof. Gifford agrees with Mr. Mayou that nitrate of silver should only be used in the later stage of the disease when the discharge is slight. He recommends milk injections also in doses up to 10 c.cm.

for adults with cyclitis and other conditions due to toxic infections, and in smaller doses for those cases of interstitial keratitis which do not respond to specific treatment, of which, by the way, he is a strong advocate.

In the main the treatment suggested is on orthodox lines. Mercurochrome is a favoured drug for conjunctivitis. A method of treating in-growing lashes by diathermy instead of the more prolonged and therefore more painful electrolysis is mentioned. The use of glaucosan in chronic glaucoma is discussed, also the intravenous injection of hypertonic solutions in acute glaucoma, with the warning that there is always danger in delaying operation too long. Prof. Gifford advocates simple massage of the eyeball in the presence of corneal scarring from superficial ulcers, in glaucoma as a temporary measure to gain time, and in cases of obstruction of the meibomian ducts. For syphilitic optic atrophy, generally considered a hopeless condition, he has been trying the injection of mercurial solutions into the cisterna magna through a needle inserted between the occipital bone and the atlas—with what success does not yet appear.

Synopsis of Midwifery and Gynæcology

Fifth edition. By ALECK W. BOURNE, M.B. Cantab., F.R.C.S. Bristol: John Wright and Sons, Ltd. 1932. Pp. 426.

THIS book has consistently improved with successive editions. It now contains all that is required for revision purposes by students up for final examinations and it should be brought to their notice. The new diagrams of the development of the early ovum are exceptionally good, although the legends might be expanded with advantage. The description of the technique of radium treatment for carcinoma of the cervix is a noteworthy addition which will be welcomed. The sections on ovarian physiology are not quite up to date and Heape's scheme for the œstrus cycle might now be omitted. The book has now reached a size beyond which a synopsis cannot be expanded without becoming less useful.

Sulphur Bacteria

A Monograph. By DAVID ELLIS, D.Sc. Lond., Ph.D., F.R.S.E., Professor of Bacteriology, Royal Technical College, Glasgow. London: Longmans, Green and Co., Ltd. 1932. Pp. 361. 21*s*.

THIS work deals with the microbiology of that group of bacteria which have sulphur granules present in their protoplasm. In the past this group has been neglected by bacteriologists, but now it would appear that the bacteriologist is held up for want of a more complete knowledge of biochemistry. Unfortunately, many problems of sulphur metabolism remain obscure. The isolation of the sulphydrol compounds towards the end of the last century and the work of Hopkins and his school on glutathione indicated the importance of sulphur in tissue metabolism. Recent observations, however, have plunged biochemists into confusion, since it is now by no means clear that glutathione plays any part in the normal oxidative processes of cells. The biochemist can hardly be expected to solve the bacteriologist's difficulties when he is already surrounded with so many of his own.

After a general introduction, Dr. Ellis devotes a chapter to sulphuretted hydrogen in connexion with sulphur bacteria, and then gives a good summary of our knowledge of the metabolism of the sulphur bacteria. He then describes the various methods of culture and the principles of classification. Much space and many illustrations are given to the leuco- and rhodo-thiobacteria, the intimate structure of the cell, and the influence of external phenomena such as light, are dealt with in one chapter, and the mechanics of ciliary movement and the colouring matter of the sulphur bacteria are discussed in another. A large bibliography and three separate indices conclude the volume.

La soufre en biologie et en thérapeutique

By M. LOEPER, Professeur à la Faculté de Médecine de Paris, Médecin de la Pitié; and L. BORY, Ancien chef de clinique à la Faculté de Médecine de Paris. Paris: G. Doin et Cie. 1932. Pp. 342. Fr.65.

THIS book deals with sulphur in all its various phases, starting with the flowers and finishing with glutathione, French thermal establishments and the value of drinking sulphurous spa waters. The illustrations range from pictures of chemical apparatus to photographs of people cured of psoriasis, and some very attractive looking pictures of French watering-places are included.

Pettibone's Text-book of Physiological Chemistry

Fifth edition. Revised and rewritten by J. F. MCCLENDON, Ph.D., Professor of Physiological Chemistry, Medical School, University of Minnesota, Minneapolis. London: Henry Kimpton. 1931. Pp. 370. 18*s*.

Prof. McClendon's revision of this well-known American work is an attempt to provide in one volume a handbook covering the elements of pure chemistry, and of organic and inorganic physical chemistry and physiological chemistry, together with a certain amount of practical work. Any such attempt can only result in the production of a rather superficial book. Some of the information provided is very sketchy and the style is distinctly American. The practical section is written in that irritatingly staccato manner which gives the student the impression that he is being bullied. For example, scattered throughout this section one sees between direct practical instructions such crisp words of command as "Write the equation," "What do you conclude?" and so on. The work has some useful points, but it is doubtful whether it will appeal to English students and teachers.

Die Elektro Chirurgie

By Prof. Dr. FRANZ KEYSER. Leipzig: Fischers Medizinische Buchhandlung. Pp. 238. M.52.

IN the early sections of this important book the technical side of surgical diathermy is clearly described. Prof. Keyser uses the spark gap apparatus giving damped waves, instead of the three electrode valve set, providing undamped waves which is much more expensive to manufacture. His results seem to be as good as those obtained with the excellent valve machines made in this country. The methods of employing diathermy are described in a thorough fashion, and the rest of the book gives an account of diathermy from a regional point of view, particularly in the treatment of cancer. The illustrations show a remarkable series of photographs of patients, before, during, and long after treatment. Prof. Keyser concludes his book by a discussion of accessory measures in the treatment of patients of which subject he has made a prolonged study.

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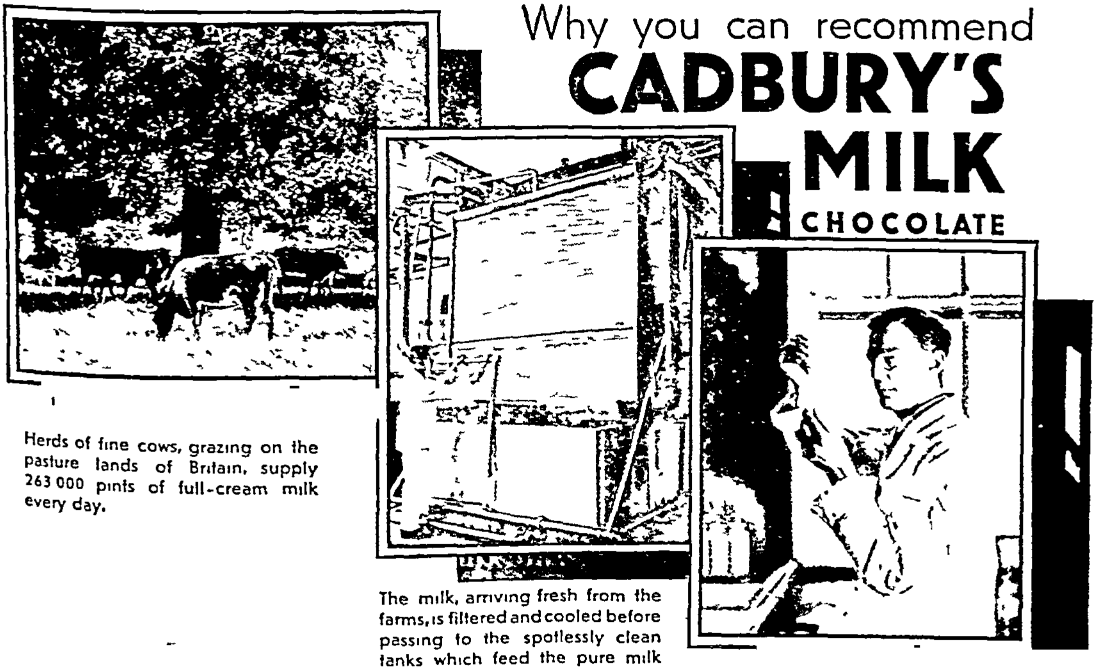

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THE LANCET.

LONDON: SATURDAY, JUNE 18, 1932.

CENTENARY OF THE BRITISH MEDICAL ASSOCIATION

An advertisement on the cover of The Lancet of July 7th, 1832, announced a public meeting to be held at Worcester, for the purpose of taking into consideration the establishment of a projected medical association in that city. The objects in view were:—

1. The collection of useful information, whether speculative or practical, through original essays or reports of provincial hospitals, infirmaries, or dispensaries, or of private practice.
2. Increase of knowledge of the medical topography of England, through statistical, meteorological, geological, and botanical inquiries.
3. Investigation of the modifications of endemic and epidemic diseases, in different situations and at various periods, thus to trace, so far as the present imperfect state of the art will permit, their connexions with peculiarities of soil or climate, or with the localities, habits, or occupations of the people.
4. Advancement of medico-legal science, through succinct reports of whatever cases may occur in the provincial courts of judicature.
5. Maintenance of the honour and respectability of the profession, generally, in the provinces, by promoting the friendly intercourse and free communication of its members.

Wakley, in commenting on the scheme, described it as "masculine and comprehensive." He went on to say: "It lays a foundation for the congenial union of scientific research and professional honour, and addressed as it is to provincial practitioners—not by any means the least independent or least skilful members of the profession, who can doubt of its success, or, observing it, can fail to desire that its benevolent and intellectual promoters may live to witness this excellent example taken up and followed throughout the whole of the British dominions?"

The meeting marked the culmination of Sir Charles Hastings's whole-hearted efforts to unite the medical profession on a basis of scientific research. His first substantial act towards this end had been to found the *Midland Medical and Surgical Reporter*, a quarterly journal for collecting and utilising the valuable clinical material of the provincial hospitals. The new venture was the reaction of Hastings and his friends to the destruction of their journal through the failure of its printers and publishers. The meeting was duly held in the board-room of Worcester Infirmary, and was a great success. Hastings delivered a splendid address setting out practical proposals which were enthusiastically adopted. The meeting marked the birth of the Provincial Medical and Surgical Association, with 310 members from all over the country. The objects which these members had before their eyes at that moment were, first and foremost, the pooling of scientific observation and knowledge; contact with medicine in foreign countries; the study of disease in the community; medico-legal science; and the formation of a code of medical ethics. There was no idea that the Association should concern itself with medico-political matters or the qualification of medical practitioners; the first Medical Act still lay 26 years in the future. These then were the ideals of the new Association. It was emphatically and proudly a provincial body; it had arisen largely through the desire of provincial practitioners to assert themselves against the preponderance of London medical institutions and the pretensions of those who ran them. The president was, therefore, a senior physician or surgeon in one of the provincial towns within the circle of the Association, and the secretaries lived in Worcester, whence they superintended the publication of the *Transactions*. The first great change in the outlook of the new body occurred when its centre of gravity was shifted to London by the irresistible pull of the metropolis. In 1854 the *Journal*—the new name for the *Transactions*—was moved to London; at the annual meeting at York in 1855 there was a lively discussion but a proposal to change the name of the Association was defeated; the representation was improved but not to the satisfaction of a large number of members who did not attend. At a special meeting held in the autumn of the same year the name was changed to British Medical Association and sweeping changes were made in the constitution of the council. The further history of the Association—its work at the formation of the General Medical Council and the passing of the Act of 1886, its influence on the administration of the poor-law and the development of State medicine, to mention only a few of its adventures—is a record of strenuous and ever-widening service to the profession and the public. It is being ably written by Mr. E. Muirhead Little for the festival which is to be celebrated in London and at Worcester, the "faithful city" of Hastings, next month.

In this centenary year the annual representative meeting will be held as in 1930 at the headquarters building in London, but it will be the first year in which the beautiful Lutyens house in Tavistock-square has served the larger purposes of an annual meeting. This house, which was opened by the King in 1925, with its memorial gates dedicated by the Archbishop of Canterbury, provides a worthy home for the activities of a great professional organisation. For its acquirement the Association is largely indebted to the statesmanship of Sir Robert Bolam, then chairman of council. But even this house will not contain the centenary meeting, and Lord Dawson of Penn, the incoming President, will deliver his address at the Queen's Hall, Langham-place, while the centenary dinner will be held at the Albert Hall, on a scale much larger than any gathering that the Association has yet convened. A special pilgrimage to Worcester is being organised, and two memorials to the founder will be unveiled. The number and scope of the scientific sections is much greater than in ordinary years, as is fitting in a society founded originally to advance the science of medicine. It is interesting that forensic medicine, so little honoured in this country, is to have one whole morning given up to it by a special section. This step at least indicates that the study of medico-legal science, one of the Association's first objects, has not retrogressed in the last hundred years. We rejoice at the honour done to the Association in the knighthood conferred on Sir HENRY BRACKENBURY, the present chairman of council, who, in the intervals of a busy general practice, has done as much for the advancement of the Association as any man in its history. Heartfelt regret is felt at the retirement of Dr. ALFRED COX after 25 years' service as medical secretary, in which he has frequently been single-handed representative and champion of the Association before principalities and powers.

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WILHELM OSTWALD

OF the four great men who created the subject of classical physical chemistry—Van't Hoff, Arrhenius, Ostwald, and Nernst—only Nernst now survives. Van't Hoff died in 1911, Arrhenius in 1927, and now Ostwald has gone, having died on April 4th in his 79th year. Born at Riga in 1853, the son of a master cooper, WILHELM OSTWALD entered the University of Dorpat in 1872. Here he obtained the degree of *Philosophiae doctor* in 1878 and the post of lecturer. In 1881 he was called to the chair of chemistry in the Polytechnic at Riga, in 1887 to the special chair of physical chemistry in the University of Leipzig. He remained at Leipzig until his retirement from University life in 1905 at the comparatively early age of 52. The rest of his life (nearly 27 years) was spent at a pleasant house in the country, which he named "Landhaus Energie," in the neighbourhood of Grossbothen in Saxony.

OSTWALD's earliest scientific work was directed to the determination of the relative strengths ("affinities") of acids and bases by physical methods which did not interfere with the equilibrium state of the chemical system. For this purpose Julius Thomsen in Copenhagen had used the measurement of the heat evolved on mixing the interacting solutions, whilst J. H. Gladstone in England had employed measurements of light absorption. OSTWALD greatly extended this line of investigation by measuring the densities and refractivities of the solutions. He then took the important forward step of correlating the results obtained by these "statical" equilibrium methods with the results obtained by "kinetic" methods—e.g., the various effects of different acids in catalysing the rate of hydrolysis of esters (such as methyl acetate) in aqueous solution. A yet greater step was the discovery that the relative strengths or affinities of acids in aqueous solution, as determined by these various methods, ran parallel to their electrical conductivities, in aqueous solution, as measured by the alternating current method of Kohlrausch. Arrived at this result, OSTWALD at once perceived the importance o Arrhenius's theory of electrolytic dissociation—ionisation in solution, especially aqueous solution—and discovered his famous "Dilution Law," whic showed that the variation with dilution of th degree of ionisation of a "weak" acid or base i aqueous solution, as determined by the electric method of Arrhenius, could be described by th law of chemical equilibrium. This discovery len great support to the explanation which the theor of Arrhenius gave of the anomalous osmotic effect which Van't Hoff had observed in aqueous solu tions of many electrolytes. OSTWALD soon becam the great protagonist of the new ionisation theor and he and his numerous pupils published lon series of researches in this field, many of thes throwing a new light on the electric potenti differences existing between metals and solution of their salts. The theory of chemical reactio velocity in solution was greatly developed an extended, whilst investigations of this nature le OSTWALD to the last great series of researches a Leipzig—namely, those on catalytic action. Thi was always a subject very close to his heart.

The discoveries of OSTWALD and his school hav had a profound influence on physiology and med cine. The many effects produced by salts, acids and bases in blood and lymph and in the interior of cells and organs are largely due to the ions an are concerned with ionic equilibria. The funda mental actions of enzymes are catalytic actions and the operations of these enzymes are largel controlled by the hydrogen-ion concentration Life is a process requiring for its balance and pois a very delicate regulation of coördinated ioni concentrations and ionic equilibria, whilst a understanding of the coördinated flux of meta bolism requires a profound knowledge of the law of chemical reaction velocity. Classical physica chemistry, the science of which WILHELM OSTWALD was the eminent organiser and one of the chief founders, is one of the pillars on which the great structure of modern physiology and medicine rests to-day.

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INSTRUCTION IN OPHTHALMIA NEONATORUM

OF all the causes of blindness in childhood and youth there is no doubt that gonococcal infection of the conjunctiva at birth still takes a chief place. The proportion on the roll of the London County Council blind schools last year with blindness due to this cause was 45 out of 218, or about 20 per cent. At the Swiss Cottage school for the blind five years ago the proportion for past and present pupils was 57 out of 255—substantially the same percentage. But now some improvement appears to have begun, for according to Mr. M. S. MAYOU, although the number of cases of ophthalmia neonatorum notified in London has not diminished during the last 15 years, the number that end in blindness has decreased to less than one half. It may be fair to infer that the larger proportion of cures is due to more efficient care. By far the most important part of treatment consists in frequent irrigation of the eyes during the acute stage, the frequency being based upon the amount of discharge. To secure this it is in most cases desirable for the infant to be admitted without delay to a hospital, and since the disease begins during the first few days of life, it is necessary for the mother to be admitted also. The problem presents obvious difficulties, but they have been overcome in some institutions, notably (from 1908) at St. Paul's Eye Hospital, Liverpool, and in London at St. Margaret's Hospital, an institution set aside by the L.C.C. for this purpose. Since this was opened in 1918 it has been utilised to an increasing extent, so that, in 1930, out of 617 notified cases in London, 196 were admitted to the hospital. The chief difficulty is that the patients are not sent in early enough. When St. Margaret's was first opened the average age at which the infant was admitted was three weeks, and although there has been improvement since, there is still too large a proportion of cases admitted with corneal ulceration. Mr. **Mayou** complains that it is difficult to get midwives to realise that the mother and infant can be moved safely by means of an ambulance on the third or fourth day after the birth of the child. Another hindrance to serious treatment is the difficulty found by the practitioner, especially if newly qualified, in gaining experience of the subject. The medical student may go through his whole course of training without seeing a case. It was this that led the Council of British Ophthalmologists some years ago to petition the General Medical Council in the following way:

> That it should be made compulsory for all students to attend once at least one of the ophthalmia neonatorum centres for practical instruction in the management and treatment of these cases, the most convenient time in the curriculum being during attendance at the course on fevers.

The matter came before the Council again at its recent summer session as we noted last week (p. 1272), when Mr. **Bishop Harman** remarked that at the West London Hospital, where formerly numbers of these cases were received, now there was not one a year. Mr. H. L. **Eason**, who had a similar tale to tell from Guy's, agreed that no teaching was adequate unless the students saw the disease itself. The extern maternity work of general hospitals is now, he said, so well run that cases of ophthalmia neonatorum are never seen. Unfortunately the dearth of cases seen by students is not due to its general rarity. About 100 cases are notified week by week in England and Wales. What must be done is to bring the student and the disease together. The General Medical Council decided not to lay down a hard-and-fast rule applicable to all medical schools, but the opinion was expressed that it is the business of the teacher in the ophthalmological clinic to make the necessary arrangements for his pupils to see these cases. Obviously facilities must vary locally. The essential matter is that in all medical schools they should exist.

ANNOTATIONS

MENTAL DEFICIENCY AND STERILISATION

The Wood Committee estimated the number of mentally defective persons, including children, in Great Britain as about 300,000, and of these we know, from the Minister of Health, that 97,310 were last New Year actually "ascertained" by local authorities, and 33,356 under guardianship or in institutions. Several times during this and last Parliamentary session the Minister has been asked if he was prepared to investigate the question of the sterilisation of the unfit and, if found desirable, to introduce legislation to eradicate the evil; and on Feb. 15th the Parliamentary secretary announced the Minister's intention to arrange for a preliminary investigation of the scientific issues involved as the first step towards a full and authoritative inquiry into the problems of mental deficiency, in which sterilisation is only one of several inter-related questions. It is now announced that the Board of Control, with the approval of the Minister, have appointed a committee constituted as follows:—

Mr. L. G. **Brock**, chairman of the Board of Control (chairman).

Mr. **Wilfred Trotter**, M.S., F.R.S., surgeon to University College Hospital; member of the Medical Research Council.

Mr. R. A. **Fisher**, Sc.D., F.R.S., of the Statistical Dept., Rothamsted Experimental Station.

Dr. A. F. **Tredgold**, F.R.C.P., associate physician in psychological medicine, University College Hospital.

Miss **Ruth Darwin**, commissioner of the Board of Control.

Dr. E. W. **Adams**, medical officer, Ministry of Health.

Dr. R. H. **Crowley**, F.R.C.P., senior medical officer, Board of Education.

Dr. E. O. **Lewis**, D.Sc., commissioner of the Board of Control.

Mr. F. Chanter of the Board of Control will act as Secretary.

The terms of reference are "to examine and report on the information already available regarding the hereditary transmission and other causes of mental disorder and deficiency; to consider the value of sterilisation as a preventive measure having regard to its physical, psychological, and social effects and to the experience of legislation in other countries permitting it; and to suggest what further inquiries might usefully be undertaken in this connexion."

THE TONSILS AND PHYSIQUE

It is generally accepted that many of the arguments put forward in favour of the removal of tonsils are to-day in need of critical examination. A paper by Dr. Ruby L. Cunningham[1] gives an account of an attempt to measure some of the effects of the operation by a study of the histories and physical measurements of young women entering the University of California from 1920 to 1929. The histories she dealt with in a previous paper,[2] but the present comparison of physical measurements and menstrual experiences should, in some ways, carry more conviction, since histories are liable to be faulty through defective interpretation and memory, an error from which the present data are free. From consideration of the histories it was concluded that the contention that normal tonsils are an aid in resisting disease was not supported, while, per contra, there was no evidence in favour of the belief that their removal closes a portal of entry for infectious and respiratory diseases. The present study adds that the condition of the tonsils—whether normal, absent, or pathological—has little effect on the physical condition of these young women of college age, from 15 to 35 years. For example no significant relationship was found between the tonsillar condition and the proportion of women with enlarged cervical glands (about 20 per cent. in each group), or between the tonsillar and the menstrual conditions as judged by the mean duration of menstruation, the amount of pain, the amount of flow, and the amount of irregularity. The incidence of aural and dental conditions showed no variation. There is a suggestion that those with pathological tonsils include a larger number with thyroid glands showing adolescent enlargement, and that those whose tonsils had been removed attained a slightly greater mean height (only one-tenth to one-fifth of an inch). The most perfect nasal structures were, naturally enough, found in the group with normal tonsils, but, on the other hand, those with pathological tonsils had on the average better vision and fewer ocular defects and their mean weight was somewhat greater. Those whose tonsils had been removed had somewhat less acne than those with normal tonsils—a slight difference but one that is statistically significant. Obviously the difficulty mainly lies in the interpretation of such differences, for it is impossible to detect what basis of selection, in the past, determined whether tonsils should be removed or not. No doubt a part is played by such factors as heredity, place of residence, past health history, standards of living and attitude towards medical care. Unless the groups are initially equal the effect of the removal or non-removal cannot be clearly determined. At least it can be said that no broad differences are to be observed in this study, and the effect of normal tonsils in augmenting growth, or of diseased tonsils in retarding development, is not apparent.

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[1] Arch. Int. Med., March, 1932, p. 453.

[2] Ibid., 1931, xlvii., 513.

It is possible that in this country a regional study might confirm these findings. In some counties, notably in Derbyshire, the proportion of school-children referred for treatment is much higher than in others. In the five years 1926 to 1930, the figures for Derbyshire were 89·8, 113·8, 118·7, 143·7, and 140·2, per 1000 routine inspections, the corresponding figures for England and Wales being 54·6, 60·9, 63·0, 66·8, and 66·5. The operation-rate for 1931 in Derbyshire is 3·5 per cent. Dr. W. M. Ash, in the annual report which we noticed last week, says that he has been unable to satisfy himself that many of the conditions for which tonsillectomy is advised are in any way benefited by the operation. In a large group of children he found that the ordinary respiratory troubles of the larynx, bronchi, and lungs were not less frequent in children whose tonsils and adenoids had been removed, nor was the incidence of the common infectious diseases affected with the possible exception of diphtheria. Little improvement in nutrition was noticed and improvement was recorded only in those children whose symptoms had been mouth-breathing, colds in the head, sore-throat, and otitis. His second indictment—that the operation is no trivial one and that post-operative complications though not common are often alarming—has less force, since of his list of sequelæ some could not fairly be attributed to the operation, and some would be less likely to occur in areas where facilities for in-patient treatment are provided. Dr. Ash has now taken the practical step of instructing his assistants to divide cases of enlarged tonsils and adenoids into two groups. Those classified as not urgently requiring operation are to be given advice on diet, with especial reference to vitamins A and D, taught to breathe properly, and treated for any septic dental conditions; they are to be re-examined not less than six months later. As a result of this alteration in procedure the proportion of cases referred for treatment fell to 83·1 per 1000 routine inspections in 1931, though the scheme had only been in operation for six months of that year. This conservative tendency is in accord with the scepticism about the value of indiscriminate tonsillectomy which studies such as that of Dr. Cunningham serve to strengthen.

EXPERIMENTAL CANCER

The report of the Yorkshire Council of the British Empire Cancer Campaign for 1931–1932 contains accounts of the experimental work carried out in the two centres, Leeds and Sheffield. Dr. J. S. Young summarises the results of his experiments on the production of epithelial hyperplasia in the lungs of rabbits by stating that the equilibrium of the resting epithelial cell is less susceptible to disturbance by an alkaline medium than by an acid one. In both cases, however, a very gross interference is essential before an epithelial reaction begins, greatly exceeding any change of the kind which might be expected to occur under natural conditions. Dr. Berenblum has continued and confirmed his investigations on the anticarcinogenic action of mustard gas and allied substances. In view of the misleading interpretation which has been given to the term "anticarcinogenic action," it may be pointed out that it describes the local inhibition of the development of tar cancer when these anticarcinogenic substances are applied alternately with tar to a circumscribed skin area. The phenomenon, interesting as it is from a theoretical point of view, has, therefore, at present no practical application.

The factor of susceptibility to carcinogenesis, the importance of which has recently been recognised, has been studied by breeding from mice which develop tar cancer at an early stage and then comparing the rate and frequency with which the offspring of such mice develop tar cancer in comparison with the ordinary laboratory stock. The results obtained so far indicate that mice bred from parents with early tar tumour develop tar warts sooner than the stock-bred mice. The report of Prof. E. Mellanby from the Sheffield centre deals mainly with the work of Mr. A. F. Watson, Ph.D. He has obtained a highly carcinogenic synthetic tar by subjecting purified turpentine to a temperature of 850° C. and subsequent steam distillation of the product. The tar obtained in this way appears to be an agent of extraordinarily high carcinogenic potency, not only for mice and rabbits, but also for rats, which have so far proved very resistant to the experimental production of skin cancer. In experiments on the effects of different diets on the development of tar cancer it was found as a general rule that the development and growth of tar cancer was most active in animals kept on diets which improved the general condition of the animals, and was conversely least active in animals kept on diets which adversely affected this general condition. Apart from this, no specific relation between the addition of different foodstuffs to a basal ration and the development of tar cancer could be established, except in one instance. The addition of fresh liver definitely accelerated the development of tar cancer in mice. This effect was observed only with fresh ox livers and not with frozen or chilled livers. Lean beef muscle and ox spleen had no accelerating effect. These interesting results confirm some earlier observations recorded by Prof. Maisin, of Louvain, but Dr. Watson's experiments have been carried out on a much larger scale and have also revealed certain fallacies which may have prevented other workers from confirming Maisin's observations.

The Yorkshire Council is to be congratulated on the activity and scientific soundness with which the investigation of cancer is carried on in their research centres.

THE STUDY OF TUBERCULOSIS BY GENERATIONS

IN the early 'nineties of last century Dr. K. F. Andvord launched his then revolutionary theory that the fatal tuberculosis of adult life is usually contracted in early childhood. Since then he has been tireless in exploring the epidemiology of tuberculosis, mainly on statistical lines, and his latest publication[1] raises many questions to which he finds stimulating counter-questions rather than cut-and-dried answers. His main thesis is that tuberculosis is a "generational" disease, and that once the degree of infection is known in a given age—say the first five years of life—then the fate of this generation, as far as its future tuberculosis mortality is concerned, can be forecast for the rest of its life.[2] According to this doctrine of morbid predestination, which is, after all, merely an expansion of the teaching that the tuberculosis of adult life is contracted in childhood, the first effects of any successful campaign against tuberculosis will be noted only in the youngest generations; the fate of the older generations has already been sealed. Only after preventive measures have been enforced for, say, a score of years will a generation in its twenties show a lowered tuberculosis mortality. With regard to the primary infections occurring in adult life, Dr. Andvord makes some curious and inexplicable comparisons between the three Scandinavian countries. In Denmark, Pirquet tests have hardly ever shown clinical manifestations of tuberculosis in recruits whose reaction changed from negative to positive during military service. In Sweden, barely 4 per cent. of recruits in this category have shown clinical signs of tuberculosis during the transition from a negative to a positive reaction. But in Norway some 8 to 10 per cent. of probationer nurses celebrate their passage from the ranks of the negative reactors to those of the positive reactors by falling ill. In other words, the adult Dane shows no other response to his first infection with tuberculosis than a positive Pirquet reaction, while a goodly proportion of Norwegians coming into contact with tuberculosis for the first time in adult life supplement their newly acquired positive reactions with serious and clinically demonstrable signs of tuberculosis. If the generation born in the period 1900–1905 in the three Scandinavian countries be followed into their twenties, similar marked differences will be found. In the period 1920–1925 this generation had a tuberculosis mortality of 42·8 per 10,000 in Norway. The corresponding figure for Sweden was only 27·1 and for Denmark it was down to 14·9. Considering how much the Scandinavian countries have in common, it is amazing that in one and the same generation the tuberculosis mortality should be approximately three times higher in Norway than in Denmark. Within her own boundaries, Norway shows striking differences in her tuberculosis mortality, that of the far north being twice that of the south of Norway. The still Pirquet-negative adult native of the north of Norway faces tragedy at his first exposure to tuberculosis, and Dr. Andvord abandons his theory of childhood infection to the extent of estimating 25 to 30 per cent. of all the deaths from tuberculosis in the north of Norway as being sequels to primary infections in adult life. On the other hand, the adult Pirquet-negative Dane seems to escape when he encounters tuberculosis for the first time. Faced by these apparent contradictions, Dr. Andvord is driven to the conclusion that "the Pirquet reaction tells us only whether a person is infected or not with tuberculosis; but it tells us little or nothing about susceptibility, prognosis, and the clinical course of a case, for with the same Pirquet reaction one may encounter the greatest contradictions in the course of the disease and its prognosis."

ATROPHIC ARTHRITIS AND ITS RELATIONS

ANY effort to clarify ideas about arthritis is welcome, and some really valuable statistical work, treating each aspect of the disease separately, has been undertaken by Dr. Millard Smith at the University Hospital, Ann Arbor, Michigan. The present material is obtained from the first 102 cases of a total series of 612. They have been observed over a period of three years, and the results are recorded in three consecutive papers.[1] The study mainly concerns the "non-articular" aspect of so-called atrophic arthritis on the generally accepted principle that the joint changes are only a manifestation of a profound physiological disturbance involving the autonomic nervous system, the vascular system, and the smooth musculature. Millard Smith begins with a classification of arthropathies. It seems unfortunate that we should be burdened with yet another classification but, as he says, nearly every writer uses a different nomenclature and it is essential that he should make it clear which he has adopted. The first or introductory paper proceeds along the following lines: distribution of cases by sex, incidence by age-groups, habitus, complexion, occupation and social status, distribution of sub-types of atrophic arthritis at the onset of the disease and when last seen, with a further study of the changes in the type of the arthritis at the onset and when finally observed; it ends with a study of the blood and the basal metabolism. Much of this has been done before, and nothing strikingly different from previous observations emerges; its value lies chiefly in confirming views already held. The second paper deals with constitutional defects. Millard Smith points out how unfortunate it is that the theory of focal infection has blinded observers to physiological deviations from the normal and consequently the constitutional aspect of the disease. He emphasises R. L. Jones's accurate clinical account of the condition by reporting similar findings in this group of 102 cases, thereby paving the way to a more liberal theory of the disease than that based on the limited one of joint infection. He lays stress especially on the regular prodromal period and its constitutional signs, which prevail and become exacerbated in the arthritic stage. He finds the disease has strong familial tendencies and the data on the allergic traits suggest an abnormal reactibility common to a significant number of patients. Allergic manifestations are evidence of a peculiar reactibility on the part of the autonomic nervous system, the vascular system, the smooth muscle system, and Millard Smith demonstrates by a diseases. The present study adds that the condition of the tonsils—whether normal, absent, or pathological—has little effect on the physical condition of these young women of college age, from 15 to 35 years. For example no significant relationship was found between the tonsillar condition and the proportion of women with enlarged cervical glands (about 20 per cent. in each group), or between the tonsillar and the menstrual conditions as judged by the mean duration of menstruation, the amount of pain, the amount of flow, and the amount of irregularity. The incidence of aural and dental conditions showed no variation. There is a suggestion that those with pathological tonsils include a larger number with thyroid glands showing adolescent enlargement, and that those whose tonsils had been removed attained a slightly greater mean height (only one-tenth to one-fifth of an inch). The most perfect nasal structures were, naturally enough, found in the group with normal tonsils, but, on the other hand, those with pathological tonsils had on the average better vision and fewer ocular defects and their mean weight was somewhat greater. Those whose tonsils had been removed had somewhat less acne than those with normal tonsils—a slight difference but one that is statistically significant. Obviously the difficulty mainly lies in the interpretation of such differences, for it is impossible to detect what basis of selection, in the past, determined whether tonsils should be removed or not. No doubt a part is played by such factors as heredity, place of residence, past health history, standards of living and attitude towards medical care. Unless the groups are initially equal the effect of the removal or non-removal cannot be clearly determined. At least it can be said that no broad differences are to be observed in this study, and the effect of normal tonsils in augmenting growth, or of diseased tonsils in retarding development, is not apparent.

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[1] Norsk Mag. f. Laegevid., May, 1932.

[2] See THE LANCET, 1930, ii., 146.

[1] New Eng. Jour. Med., 1932, ccvi., 103, 160, 211.

It is possible that in this country a regional study might confirm these findings. In some counties, notably in Derbyshire, the proportion of school-children referred for treatment is much higher than in others. In the five years 1926 to 1930, the figures for Derbyshire were 89·8, 113·8, 118·7, 143·7, and 140·2, per 1000 routine inspections, the corresponding figures for England and Wales being 54·6, 60·9, 63·0, 66·8, and 66·5. The operation-rate for 1931 in Derbyshire is 3·5 per cent. Dr. W. M. Ash, in the annual report which we noticed last week, says that he has been unable to satisfy himself that many of the conditions for which tonsillectomy is advised are in any way benefited by the operation. In a large group of children he found that the ordinary respiratory troubles of the larynx, bronchi, and lungs were not less frequent in children whose tonsils and adenoids had been removed, nor was the incidence of the common infectious diseases affected with the possible exception of diphtheria. Little improvement in nutrition was noticed and improvement was recorded only in those children whose symptoms had been mouth-breathing, colds in the head, sore-throat, and otitis. His second indictment—that the operation is no trivial one and that post-operative complications though not common are often alarming—has less force, since of his list of sequelæ some could not fairly be attributed to the operation, and some would be less likely to occur in areas where facilities for in-patient treatment are provided. Dr. Ash has now taken the practical step of instructing his assistants to divide cases of enlarged tonsils and adenoids into two groups. Those classified as not urgently requiring operation are to be given advice on diet, with especial reference to vitamins A and D, taught to breathe properly, and treated for any septic dental conditions; they are to be re-examined not less than six months later. As a result of this alteration in procedure the proportion of cases referred for treatment fell to 83·1 per 1000 routine inspections in 1931, though the scheme had only been in operation for six months of that year. This conservative tendency is in accord with the scepticism about the value of indiscriminate tonsillectomy which studies such as that of Dr. Cunningham serve to strengthen.

EXPERIMENTAL CANCER

The report of the Yorkshire Council of the British Empire Cancer Campaign for 1931–1932 contains accounts of the experimental work carried out in the two centres, Leeds and Sheffield. Dr. J. S. Young summarises the results of his experiments on the production of epithelial hyperplasia in the lungs of rabbits by stating that the equilibrium of the resting epithelial cell is less susceptible to disturbance by an alkaline medium than by an acid one. In both cases, however, a very gross interference is essential before an epithelial reaction begins, greatly exceeding any change of the kind which might be expected to occur under natural conditions. Dr. Berenblum has continued and confirmed his investigations on the anticarcinogenic action of mustard gas and allied substances. In view of the misleading interpretation which has been given to the term "anticarcinogenic action," it may be pointed out that it describes the local inhibition of the development of tar cancer when these anticarcinogenic substances are applied alternately with tar to a circumscribed skin area. The phenomenon, interesting as it is from a theoretical point of view, has, therefore, at present no practical application.

The factor of susceptibility to carcinogenesis, the importance of which has recently been recognised, has been studied by breeding from mice which develop tar cancer at an early stage and then comparing the rate and frequency with which the offspring of such mice develop tar cancer in comparison with the ordinary laboratory stock. The results obtained so far indicate that mice bred from parents with early tar tumour develop tar warts sooner than the stock-bred mice. The report of Prof. E. Mellanby from the Sheffield centre deals mainly with the work of Mr. A. F. Watson, Ph.D. He has obtained a highly carcinogenic synthetic tar by subjecting purified turpentine to a temperature of 850° C. and subsequent steam distillation of the product. The tar obtained in this way appears to be an agent of extraordinarily high carcinogenic potency, not only for mice and rabbits, but also for rats, which have so far proved very resistant to the experimental production of skin cancer. In experiments on the effects of different diets on the development of tar cancer it was found as a general rule that the development and growth of tar cancer was most active in animals kept on diets which improved the general condition of the animals, and was conversely least active in animals kept on diets which adversely affected this general condition. Apart from this, no specific relation between the addition of different foodstuffs to a basal ration and the development of tar cancer could be established, except in one instance. The addition of fresh liver definitely accelerated the development of tar cancer in mice. This effect was observed only with fresh ox livers and not with frozen or chilled livers. Lean beef muscle and ox spleen had no accelerating effect. These interesting results confirm some earlier observations recorded by Prof. Maisin, of Louvain, but Dr. Watson's experiments have been carried out on a much larger scale and have also revealed certain fallacies which may have prevented other workers from confirming Maisin's observations.

The Yorkshire Council is to be congratulated on the activity and scientific soundness with which the investigation of cancer is carried on in their research centres.

THE STUDY OF TUBERCULOSIS BY GENERATIONS

IN the early 'nineties of last century Dr. K. F. Andvord launched his then revolutionary theory that the fatal tuberculosis of adult life is usually contracted in early childhood. Since then he has been tireless in exploring the epidemiology of tuberculosis, mainly on statistical lines, and his latest publication [1] raises many questions to which he finds stimulating counter-questions rather than cut-and-dried answers. His main thesis is that tuberculosis is a "generational" disease, and that once the degree of infection is known in a given age—say the first five years of life—then the fate of this generation, as far as its future tuberculosis mortality is concerned, can be forecast for the rest of its life.[2] According to this doctrine of morbid predestination, which is, after all, merely an expansion of the teaching that the tuberculosis of adult life is contracted in childhood, the first effects of any successful campaign against tuberculosis will be noted only in the youngest generations; the fate of the older generations has already been sealed. Only after preventive measures have been enforced for, say, a score of years will a generation in its twenties show a lowered tuberculosis mortality. With regard to the primary infections occurring in adult life, Dr. Andvord makes some curious and inexplicable comparisons between the three Scandinavian countries. In Denmark, Pirquet tests have hardly ever shown clinical manifestations of tuberculosis in recruits whose reaction changed from negative to positive during military service. In Sweden, barely 4 per cent. of recruits in this category have shown clinical signs of tuberculosis during the transition from a negative to a positive reaction. But in Norway some 8 to 10 per cent. of probationer nurses celebrate their passage from the ranks of the negative reactors to those of the positive reactors by falling ill. In other words, the adult Dane shows no other response to his first infection with tuberculosis than a positive Pirquet reaction, while a goodly proportion of Norwegians coming into contact with tuberculosis for the first time in adult life supplement their newly acquired positive reactions with serious and clinically demonstrable signs of tuberculosis. If the generation born in the period 1900–1905 in the three Scandinavian countries be followed into their twenties, similar marked differences will be found. In the period 1920–1925 this generation had a tuberculosis mortality of 42·8 per 10,000 in Norway. The corresponding figure for Sweden was only 27·1 and for Denmark it was down to 14·9. Considering how much the Scandinavian countries have in common, it is amazing that in one and the same generation the tuberculosis mortality should be approximately three times higher in Norway than in Denmark. Within her own boundaries, Norway shows striking differences in her tuberculosis mortality, that of the far north being twice that of the south of Norway. The still Pirquet-negative adult native of the north of Norway faces tragedy at his first exposure to tuberculosis, and Dr. Andvord abandons his theory of childhood infection to the extent of estimating 25 to 30 per cent. of all the deaths from tuberculosis in the north of Norway as being sequels to primary infections in adult life. On the other hand, the adult Pirquet-negative Dane seems to escape when he encounters tuberculosis for the first time. Faced by these apparent contradictions, Dr. Andvord is driven to the conclusion that "the Pirquet reaction tells us only whether a person is infected or not with tuberculosis; but it tells us little or nothing about susceptibility, prognosis, and the clinical course of a case, for with the same Pirquet reaction one may encounter the greatest contradictions in the course of the disease and its prognosis."

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[1] Norsk Mag. f. Laegevid., May, 1932.
[2] See THE LANCET, 1930, ii., 146.

[1] New Eng. Jour. Med., 1932, ccvi., 103, 160, 211.

These three papers should certainly fulfil their object—namely, to add momentum to an increasing interest in "non-articular" aspects of atrophic arthritis.

EXPERIMENTAL RENAL FAILURE

THE physician interested in nephritis has long been confronted with a problem of great importance. Can the rise of blood pressure observed in many cases of Bright's disease be properly considered secondary to the renal lesion; or is it not rather evidence that the renal vessels have undergone severe change parallel with independent change in others of the smaller blood-vessels? Should not arterial hypertension be interpreted as a sign that the renal lesion is secondary to a vascular defect?

The first important work on this problem was the classical series of experiments by Sir John Rose Bradford in 1899. He showed that removal of two-thirds of the total kidney tissue in animals caused polyuria, and that removal of three-quarters of it caused polyuria with an increase in the total urea excretion, but with nitrogen retention; cardiac hypertrophy was not produced. Subsequent investigations have often given conflicting results; thus Janeway, Cash, and others claimed to have produced some degree of arterial hypertension by various methods of partial renal destruction, whereas Anderson and others failed to get such effects. In view of this conflict of evidence it is of interest to read of a study by A. Chanutin and E. B. Ferris,[1] who have carried out some careful experiments, with ample controls, on rats. Their method was to remove half to three-quarters of one kidney, and, after a week's interval, the whole of the other kidney. The usual laboratory methods for examining the blood and urine were employed and the diet was elaborately regulated. Estimation of blood pressure proved difficult, and finally the observers were obliged to have recourse to direct estimation of the pressure by introducing a cannula into the carotid artery just before killing the animal. Large numbers of control animals were employed so as to determine the constancy or otherwise of apparent deviations in the experimental animals. Definite nitrogen retention and pronounced polyuria were observed during the first few days after completion of the operative measures, but the volume of urine diminished within a fortnight. After this time the degree of nitrogen retention and polyuria were found to depend on the extent of renal damage. Animals killed at intervals were found to show renal hypertrophy after the second week; hypertension in this early stage was noted in only one case and probably cannot be considered significant. The observations were then carried out on a large group of animals in apparently good health at a period of more than six weeks after completion of the operations on the kidney; all animals with pulmonary disease and anæmia were excluded from the series. It was found that retention of 50 to 197 mg. of non-protein nitrogen was present. In all cases where renal insufficiency was marked there was a notable elevation of the blood pressure, although this could not be shown to run strictly parallel in all cases to the degree of renal failure; in other words the degree of nitrogen retention could not be used as a criterion for the prediction of hypertension. Definite thickening of the left ventricle was often present. A special study was made of a group of partially nephrectomised animals, which had moderate anæmia although their health seemed otherwise good. The renal damage in these cases was shown to produce polyuria with urine of a constant low specific gravity. A few of these rats showed no hypertension and in the rest there was again no close relation between the degree of hypertension and of nitrogen retention. All animals which were in any way severely ill were excluded when reaching these conclusions.

Commenting on these findings Chanutin and Ferris say that they think the polyuria depended to a great extent on the hypertension, and are inclined to support the postulate of Verney that such hypertension represents a protective mechanism designed to increase the work of the residual glomeruli. Amongst the negative findings in this series of observations it should be noted that œdema was never produced.

PSYCHOLOGICAL FACTORS IN PERIPHERAL VISION[1]

A PIECE of research designed to investigate the physiological and psychological components in peripheral vision has important bearings on everyday problems. Central rather than retinal processes were investigated, the method being the exposure of many different figures by a specially designed tachistoscopic apparatus which allowed for the perception on the periphery of the field at various meridians. The results showed that perceptual accuracy diminished with increase of eccentric angle of exposure of the forms. Larger forms are more easily perceived than smaller ones. Increased eccentric exposure makes objects appear less bright and smaller under the experimental conditions. Reports are influenced by past experiences of the observer in the experimental procedure. Time exposure increases accuracy in recognition, and simultaneous exposure of other objects in other fields diminishes accuracy. There is also a tendency to under-estimate the eccentric angle of exposure and this effect persists even when the form is exposed near a fixed and continuously illuminated reference mark. It is found difficult to separate physical, retinal, and central components.

The inquiry is really an extension of work done on retinal stimulation in eels by Adrian and Matthews, who found that retinal excitation in one area led to a reinforcement of action and of excitation in another. In some of these human experiments, however, mutual inhibition was found to occur when two fields were simultaneously excited. Myers Salaman's observation, as is here recalled, showed that both inhibition and reinforcement took place. The most likely explanation is the existence of two levels of activity in perception—a retinal excitatory and a central inhibitory process.

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[1] Arch. Int. Med., May, 1932, p. 767.

[1] By G. C. Grindley, Ph.D. Medical Research Council Special Report Series No. 163. London: H.M. Stationery Office. 1932. Pp. 49. 1s.

THE RE-ALLOCATION OF RADIUM

CHANGES in the distribution of the 10 grammes of radium acquired by the King Edward's Hospital Fund for London are recorded in the report of their distribution committee, which was presented at the annual meeting on June 7th. In the course of 1931 the authorities of St. Mark's Hospital for Diseases of the Rectum found that the number of their cases suitable for treatment with radium had decreased, and were therefore able to return the 100 mg. lent them by the Fund. Pending re-allocation this radium has been in temporary use at other hospitals. In June, 1931, the Westminster Hospital submitted a report by its radium staff which described the results obtained by the use of the 4-gramme bomb as being so discouraging as not to justify the hospital in financing the undertaking further. This bomb had been acquired by the Fund in exchange for an equal quantity of radium to be used by the National Radium Commission outside London, part of the arrangement with the Commission being that the hospital should continue the scheme of radium therapy agreed between the hospital and the Commission. The King's Fund interviewed the representatives of the hospital, and ascertained that the Commission, having considered the hospital's report of the results of the use of the bomb, were unanimous in recommending its division into four units of 1 g. each, to be allocated to separate hospitals for surface therapy. After many discussions and conferences, the recommendation of the Commission was accepted in principle by the distribution committee, and the four 1-gramme units were allocated one each to the Cancer (Free), the Middlesex, University College, and Westminster Hospitals, and the 100 mg. returned by St. Mark's to Guy's Hospital.

TREATMENT OF PARKINSONISM BY TRYPAN-BLUE

A FEW years ago three French workers reported definite improvement in one case and doubtful results in two others from the use of trypan-blue in the treatment of the parkinsonian sequelæ of encephalitis lethargica. Laignel-Lavastine and Jean Sterne [1] have now used this remedy in 15 cases which had not benefited appreciably by the ordinary measures. They state that none but the purest trypan-blue is of any value; as it is accumulated and not eliminated, it must be given in weak doses well spaced out, but it maintains its action. They claim that its action is more than symptomatic. They use a 1 per cent. solution in water and the course is as follows: two injections of 1 c.cm. each, followed by three or four injections of 2 c.cm., the interval between each two injections being three or four days. An interval of a month is allowed between courses. The solution is injected intravenously, but no harm is done if any of it is accidentally injected into the tissues. There is usually a slight reaction with vasodilatation in the face, cough, slight tachycardia and rise of blood pressure, and an accentuation of tremor; this lasts for a few minutes and is succeeded by a short period of vasoconstriction, after which the patient returns to a normal condition. No ill-effects of any kind have been observed, and the injections have been well tolerated even by very exhausted patients. The authors stop when they observe a bluish tinge of the conjunctiva and integument; they do not agree that this colour goes side by side with the therapeutic effect. A transitory improvement is sometimes observed after a few injections. Sometimes permanent improvement makes its appearance early; sometimes it is tardy; in one case the treatment was continued for two years—largely to please the patient—and the improvement took place suddenly. Recent cases are found to be more susceptible to treatment than advanced ones, but even the latter sometimes give good results. The symptom which seems to be most affected is the muscular rigidity; one patient who could only swallow liquid was able to take bread, and another was able to recommence wood-carving. In the best cases there is a great diminution in neurological signs. The tremor is much less influenced, but it is sometimes possible to reduce or even to dispense with scopolamine. The eye symptoms apparently do not improve, but the mental dullness is reduced. In the evolutionary forms with somnolence, clonic spasm, and loss of control over salivation, Laignel-Lavastine and Sterne claim a diminution in the symptoms.

DR. Robert J. Rowlette has been elected president of the Irish Medical Association.

WE regret to announce the death of Prof. Leith Murray, professor of obstetrics and gynæcology in the University of Liverpool, which occurred on Saturday last, June 11th, in the 53rd year of his age. His sudden death is a loss not only to the City and University of Liverpool, but to a very wide circle of friends.

THE annual elections at the Royal College of Surgeons in Ireland were held last week. Mr. Frank Chetwode Crawley, vice-president, was elected president, and Mr. Seton Pringle, vice-president. Mr. Crawley is ophthalmic surgeon to the Royal City of Dublin Hospital, and one of the surgeons to the Royal Victoria Eye and Ear Hospital. Mr. Pringle is surgeon to the Royal City of Dublin Hospital and to Drumcondra Hospital.

BRITISH MEDICAL ASSOCIATION: MIDDLEMORE PRIZE, 1933.—The Middlemore prize, consisting of a cheque for £50 and an illuminated certificate, and founded in 1880 by the late Mr. Richard Middlemore, of Birmingham, is awarded annually for the best essay or work on any subject which the council of the British Medical Association may from time to time select in any department of ophthalmic medicine or surgery. The council of the Association will consider an award of the prize in the year 1933 to the author of the best essay on the treatment of glaucoma. Essays must reach the Medical Secretary, B.M.A. House, Tavistock-square, London, W.C.1, on or before Dec. 31st, 1932, signed with a motto only and accompanied by a sealed envelope marked on the outside with the motto and containing the name and address of the author.

A Voyage d'Études Médicales to the watering-places of France will take place this year in Central France from Sept. 8th to 19th inclusive, under the conduct of Prof. Maurice Villaret and Dr. Etienne Chabrol. The party will assemble on Sept. 8th at Pougues. The principal places to be visited are St. Honoré-les-Bains, Néris-les-Bains, La Bourboule, Mont Dore, St. Nectaire, Royat, Châtel-Guyon, Vichy. Further information may be had from Madame Juppé-Blaise, Federation of the Health Resorts of France, Tavistock House (North), Tavistock-square, London, W.C.1.

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[1] Bull. et mém. Soc. méd. hôp. de Paris, May 23rd, p. 689.

SPECIAL ARTICLES

WHAT IS WRONG WITH THE MEDICAL CURRICULUM?

(A Series of Opinions Contributed by Request)

II

BY RALPH M. F. PICKEN, M.B., B.Sc., D.P.H.
MEDICAL OFFICER OF HEALTH FOR CARDIFF; LECTURER IN PUBLIC HEALTH AT THE WELSH NATIONAL SCHOOL OF MEDICINE

ALTHOUGH I am assuming that any criticism of mine of the medical curriculum will be of interest mainly in relation to the teaching of preventive medicine, I cannot refrain from mentioning that certain general features of the output of the medical schools are inevitably impressed upon the minds of those who, like myself, are passing through their hands a considerable number of post-graduate students and assistant medical officers. Personally, I am not very much concerned as to whether the men and women who come on to my staff have a great deal of knowledge. As a matter of fact, they have often an astonishing accumulation of smatterings of information. But, when that information relates to my own special line of work, I find that much of it is already obsolete, and I conjecture that the same is true of some of the items of information they have collected about other branches of medicine. On the technical and manipulative side they appear to be quite good, and it seems to me to be right that the schools should concentrate upon making them so; for it is hard to acquire technique from the study of literature in the isolation of post-graduate practice. But the other things which they ought to have acquired—initiative, resourcefulness and, above all, capacity to go on learning and unlearning—I find singularly lacking, and I do not admit that such things cannot be taught. Especially in our branch of medicine, where the temptation to make pronouncements is great, scientific scepticism and a suspension of judgment which is not mere hedging are much to be desired. It is hard to compare immeasurables of the present with the past, but my impression is that deficiency in these respects is at least as great now as it was when I graduated and perhaps greater than in the student days of my teachers. Probably the much better organisation of medical teaching nowadays is offset by the admitted overloading of the curriculum.

I note with some concern that there are still medical men who worship at the shrine of the "single portal," which would force all our teaching into moulds created by anonymous examiners and still further encourage the mental accumulation of facts. I do not wish to see any reform of the curriculum which would magnify the importance of ordeal by examination. Although I have a profound faith in the future of preventive medicine, I do not desire to be a party to any further burdening of the student mind with specialised knowledge of my own kind. But as we have found no practical substitute for the examination system we should at least try to make it more reasonable and effective.

A REVOLUTION IN OUTLOOK

Apart from these general considerations, we of the public health service are interested in the teaching of medicine in all its branches because successful public health work entails familiarity with many aspects of medicine and of medical practice and outlook which cannot be described strictly as preventive. While it is desirable that public health officers should be administrators with a scientific bent, it is also essential that those whose daily work includes the care of patients in council hospitals of various kinds or the holding of out-patient consultations under school medical, maternity, child-welfare, tuberculosis, or venereal diseases schemes, should be sound clinicians. The public health official is a practitioner of medicine, practising his art sometimes directly upon his patients, sometimes on the public in groups. His success depends on many things, but always, in the last instance, upon his knowledge of medicine. His peculiar interest should be to get behind the manifestations of diseases to its origins, to watch for the weakest link in the chain of causes and to lead the attack upon it. He finds himself in agreement both with the layman's view that prevention should take the place of cure, and with the contention of his professional colleagues that preventive and curative medicine cannot be separated from one another; but he thinks that medical teaching and medical practice still tend to lay all the stress upon cure, and that almost a revolution in the outlook of some of the teaching bodies will be required before there is prospect of the young graduate fledging with a conception of the paramount importance of prevention even as clear as the average man in the street has.

The practitioner of preventive medicine is not blind to the fact that there is a very good reason why the teachers of medicine, surgery, and obstetrics who have the students in their final years, tend to be perfunctory in their references to prevention. He knows that the practical demand upon the medical profession is mainly for treatment and that even within the public health departments this demand has to be met. Moreover, the clinical manifestations of a particular disease affecting an individual are even now, though much less than formerly, such that one mind can apprehend them and control the application of the appropriate remedies. On the other hand, public health measures have been, even more in the past than now, questions of large scale organisation, like the provision of isolation hospitals, or engineering works, such as the installation of waterworks or schemes of sewage disposal or the ventilation of public buildings. Naturally, the teacher of medicine has dismissed such matters with a casual reference, as being fortunately outside the province of the average medical man or woman. So that the curriculum which starts, rightly I believe, by inculcating a scientific outlook with a bias toward the natural sciences, then proceeds to make fairly ample provision for studies of the normal working of the healthy human body, of pathological processes and the causative elements of diseases, concentrates in its later years upon the treatment of disease and the application to it of the already acquired knowledge of physiology and pathology, to the almost complete exclusion of the bearings of these sciences upon prevention. Moreover, organised public health effort calls to its aid mathematical methods and the exact sciences to a much greater extent than ordinary medical practice does, and the teachers of medicine are not greatly concerned with these things which they and the senior students consider they have left well behind them. Preventive medicine of this kind is not a subject which the average teacher of medicine could be expected to deal with.

COURSES IN HYGIENE AND FEVERS

In recognition of this aspect of the problem most teaching bodies have worked into their curriculum, at some stage convenient to the teachers of other subjects, a short course under the title hygiene or public health or preventive medicine, but until comparatively recently such courses were perfunctorily conceived and designed. They tended rather to emphasise the exclusiveness of this province of medicine, which was apt to mean "drains" to the undergraduate as "stinks" were chemistry to the schoolboy nourished upon classics. It is unnecessary to discuss at any length such courses, their defects and their reform, for the matter has been covered by a recent comprehensive report of the Society of Medical Officers of Health[1] which has been sent to the General Medical Council and the various teaching bodies for their consideration. The society have drafted a model syllabus which aims at recognising the importance of confining specific teaching on public health to those aspects of it which will be useful to the non-specialist practitioner and about which he is otherwise unlikely to be informed. At best such a syllabus can cover the ground only of a very much modified and abbreviated D.P.H. course. It includes a variety of necessarily disconnected items whose collective significance is not readily grasped except by those who are nearing the end of their undergraduate period and contemplating the problems of actual practice. It should therefore be placed near the end of the curriculum. In fact, the course in public health is apt to be squeezed out of the final years, yielding place to studies of a more clinical nature. For the reasons already given, it is not surprising that hygiene should get left in the scramble for a place in the final year's scheme of studies.

Again, when we contemplate the evolution of medical treatment and medical teaching, it is a matter of no surprise that instruction in "fevers," such as it is, is regarded purely as a part of systematic and clinical medicine, and is therefore apt to be wrongly related to the study of public health which is so largely concerned with the control of communicable disease. But it is disconcerting to find that the lecturer or clinical teacher in fevers may have students in his class who have had little or no opportunity of learning about even the clinical manifestations and treatment of complications of the fevers about which he ought not to have to teach them. Finally, a question may or may not be set in the paper in medicine, but if it is set, the answer is probably scrutinised by examiners who practically never see fevers and who probably have quite vague ideas as to the nature of the teaching. In the provincial schools, at least, the teachers of hygiene and fevers are usually closely associated with one another in the local health department. Their point of view is, or ought to be, similar and the examination in fevers, both written and clinical, would fit much more aptly with that of hygiene than medicine.

It is suggested therefore that the courses of instruction and the examinations in hygiene and fevers should be brought into association with one another and that they should together be given a place in the curriculum commensurate with their practical importance to the practitioner of medicine.

THE PROPHYLACTIC SPIRIT

This claim, however, represents a very minor part of our plea for the place of preventive medicine in the curriculum. Indeed, it is almost borrowing a *cliché* to say that preventive medicine should permeate the whole curriculum. How it may be done has been set out by Sir George Newman in his "Recent Advances in Medical Education in England" (1923). The report of the Society of Medical Officers of Health, already referred to, puts it this way, "Adequate training in preventive medicine can never be given in any *ad hoc* course of instruction; it can be secured only with the active co-operation of all teachers of the medical school." We must, of course, be prepared to answer the request for a plain statement as to what the teachers are to do. The answer is, indeed, perfectly simple. It is that every teacher of medicine, surgery, and obstetrics will give as prominent a place to the practical means of prevention of each disease, so far as they are known, as he does to its clinical manifestations and treatment. It means, of course, that teachers must be as greatly interested in prevention and as up to date in their knowledge of it, including its practical difficulties, as in diagnosis and treatment. In fact, their occasional pronouncements on the subject are frequently unpractical and quite often scientifically unsound. The impression of public health officers is that most of them are neither interested nor well-informed, and it is hard to see how their interest is to be roused. This is the real difficulty. My own experience as an undergraduate convinces me that it is not insuperable, for I happened to have teachers imbued with the prophylactic spirit. From comparatively early times there had been a close association between the public health administration of Glasgow and its medical school. Sir William Gairdner for a time combined the duties of professor of medicine and medical officer of health. The professors of medicine and surgery of my own time had been resident medical officers in the great fever hospitals of Glasgow, and, indeed, it was quite in the ordinary and direct line toward consulting practice to seek such posts. In this way successive generations of teachers came under the influence of distinguished hygienists like J. B. Russell, A. K. Chalmers, and John Brownlee. Prof. Samson Gemmell, when he was a young physician, used to spend his evenings prowling round the slums with J. B. Russell, and his caustic comments on the family circumstances related on the bed-cards ("thirty shillings a week and the fecundity of rabbits!") left an indelible impression of the importance of social factors upon the minds of his students. Macewen, too, never ceased to hark back to the causes of surgical diseases and to emphasise the practical measures by which they might be prevented. I gather from my colleagues that some of the schools, especially those which have not been associated so closely with university and town life, have not exhibited this preventive bent, and I think I notice the difference both in the proportion and quality of the men and women entering the public health service from such schools and also in the lack of interest in preventive medicine, and the narrower social outlook, of those who enter private practice.

A HOPEFUL SIGN

It is perhaps a hopeful sign that we have seen in recent years men who have made a great name for themselves in medicine or surgery retiring into a life of public health publicity. It is true that these men, who have been clinical teachers of note, sometimes exhibit more goodwill than understanding of the practical problems of prevention. But the spirit is there, and, if the viewpoint they have reached has its influence upon those who have sat at their feet as clinicians, we may move much more rapidly to the right sort of teaching in preventive medicine than most of us dare to hope. It is possible also that the growing use for teaching of the hospitals under the management of the health departments may help in this direction, because it is reasonable to suppose that there will be in future a tendency toward freer circulation of staff as between the preventive and curative divisions within these departments.

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[1] Public Health, 1930, xliii., 253.

But, however they are to be attained, there should be no misunderstsnding as to the aims of the public health service in relation to the medical curriculum. We certainly want the special courses on hygiene or public health or preventive medicine, or whatever it may be called, and on fevers, to be good courses and to be fitted into their proper places in the schemes of study. But we are still more concerned that the prevention of disease should never for one moment be lost sight of throughout the whole curriculum.

ACUTE POLIOMYELITIS IN CLINICAL PRACTICE

By G. R. Girdlestone, M.B. Oxf., F.R.C.S. Eng.

HON. SURGEON TO THE WINGFIELD ORTHOPÆDIC HOSPITAL, AND HON. ORTHOPÆDIC SURGEON TO THE RADCLIFFE INFIRMARY, OXFORD

The diagnosis and treatment of infantile paralysis is of intense interest nowadays, apparently for two reasons: first, the warning of epidemics which have been occurring on a small scale in our country and on a large scale in the Dominions; and secondly, the almost magical advance that has been made in treatment. The paper by Macnamara and Morgan,[1] recently published in this journal, gives convincing statistics as to the possibilities of preparalytic diagnosis and the effects of treatment by convalescent serum, and also outlines the indications for orthopædic treatment.

In this country it has not been thought possible—at any rate in the absence of an epidemic—to make a preparalytic diagnosis, and, further, efforts towards diagnosis at this stage have not seemed necessary because the effect of serum treatment has hitherto appeared to be rather problematical. Also the value and the urgency of orthopædic treatment is not yet fully appreciated or widely recognised.

I try in this paper to give due balance to the treatment indicated at various stages, and to the preparatory steps that we, in England, must take forthwith. Who can say when a big epidemic may visit us? Danger lies in inaction based on what may well be a false sense of security. Various small epidemics have occurred in this country in the last five years, and what happens on a small scale can, and probably will, happen on a large scale. Though the epidemics have been small they are none the less significant, and, whether we are to suffer from big epidemics or not, a high proportion of our sporadic cases are of the epidemic (acute febrile) character, and therefore susceptible of preparalytic diagnosis.

No longer can we plead ignorance of the symptomatology of the prodromal stages or of the *spinal sign* which is a specific and timely warning of involvement of the central nervous system; timely in that it appears sufficiently long before the toxins reach the anterior horn cells to give us time to act *if all is ready to hand.*

THREE STAGES

From the point of view of treatment the disease may be considered in three stages, and I propose to give a clinical example of each stage.

Case 1.—One day in September, 1926, a doctor found that his son, aged 6, was seriously ill. His temperature was up to 105°F., he had severe headache, and within 24 hours severe retching and vomiting which lasted two days. There was nasal catarrh with thick mucous discharge, said not to be membranous. His throat was not examined. Headache and pain in the neck and back persisted three or four days. There was no coma, he was slightly delirious at night, but perfectly lucid in the day. On the fourth day he complained of general weakness, could not move his limbs, and could not move about in bed. Within 24 hours he became almost completely paralysed, except for diaphragmatic breathing, and talking made him short of breath.

On the third day of the boy's illness, his mother sickened and went day by day through an almost identical illness. First fever, then within 12 or 24 hours severe headache, later persistent retching and vomiting. The vomiting was exceedingly diffic[illegible] and only a little greenish mucous was [illegible] up. There was very severe nasal catarrh with thick mucous discharge, said to be non-membranous. The throat was not examined. Her temperature reached, but did not exceed, 104°F. On the fourth day she complained of her neck and back. On the sixth day she began to feel all her muscular power leaving her, and became paralysed in all four limbs and trunk. She complained bitterly of difficulty in breathing, the auxiliary muscles of respiration were paralysed, the platysma remaining active.

The patient was eight months pregnant, and early on the fifth morning labour commenced and the baby was born without difficulty, and fortunately remained quite well.

Here indeed was a tragedy, for both patients were extensively paralysed. To have saved both mother and son a preparalytic diagnosis on signs and symptoms alone would have been necessary, and there was no epidemic to give a timely hint. But for the mother the diagnosis was ready-made. Lumbar puncture for confirmation and immediate injection of convalescent serum would have given her immunity.

Case 2.—On Sept. 19th, 1922, a small boy was sent over to the Wingfield Hospital from Banbury, on about the 14th day of acute infantile paralysis. He had been, and was, ill, crying, restless, fretful, peevish, sleepless. He was wrapped in smooth-surfaced cotton-wool bandages and put on a softly padded spinal frame with head-piece, and within an hour or two all his distress disappeared and he became passive, content, and placid, an entirely different child.

When one considers the life of the average anterior horn ganglion cell, the reason for this dramatic change is obvious. Each such cell is normally compelled to allow its body to constitute a sort of telephone exhange by which various cells can make connexion with the muscle-fibres (200 or more) for which it is responsible. On the reflex side the muscle is rung up from skin, joints, and other parts of the sensorium, and the frequency of all these rings depends upon the movements of the part concerned. The messages to the motor-end-plate through the reflex arc emanate from the anterior horn cell at about eleven per second. Then on the voluntary side the cortical cells ring up the muscle whenever movements are required, and their messages pass from the ganglion cell at some 30 to 50 per second. The anterior horn cell is undisturbed only when its owner is completely at rest or asleep. During the first few days of anterior poliomyelitis not only are these cells inflamed and poisoned by the virus, but their owner is restless, fretful, and sleepless. The aching cell is subjected to, and doubtless maddened by a constant succession of cortical and reflex stimuli. Now note the change. The smooth wool covering and the complete relaxation produced, and indeed enforced, by comfortable splintage, cut out both reflex and cortical stimuli, and the ganglion cell is at rest. Clearly the chances of recovery of every such cell are immensely enhanced.

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[1] The Lancet, Feb. 27th, p. 469, March 5th, pp. 520 and 527.

CASE 3.—On Jan. 29th, 1931, a girl, aged 13, was brought to see me at one of our clinics. Her face was impassive and gloomy. Only two positions were possible to her: (1) she could lie on her side, completely doubled up, with her hips against her abdomen; or (2) sit in the most extraordinary position, her thighs, legs, and feet flat on the table, and her whole abdomen and chest resting along her thighs, with her face only a few inches above her feet. This was on account of fixed deformities, due to complete lack of any sort of orthopædic control.

Some years previously this girl was attacked by infantile paralysis within a few miles of the orthopædic clinic to which she only now for the first time had been sent.

WHAT SHOULD BE DONE

These cases illustrate the three main stages of the disease relative to its treatment, and from these illustrations it is easy to extract certain indications for action. But incidentally it is worth mentioning that those instances are not rare exceptions. In the three counties of Berkshire, Buckinghamshire, and Oxfordshire, with a total population of about 750,000, I have been responsible during the past nine years for the treatment (almost always at a late stage) of some 650 cases of anterior poliomyelitis which has left residual paralysis.

The indications for action may be summarised as follows:—

1. The widespread distribution of a description of the signs and symptoms of infantile paralysis in its preparalytic stage, so that every practitioner may be on his guard for the febrile case, whether sporadic or epidemic, and particularly understand how to recognise poliomyelitis arising in a "contact." At the same time he must realise how urgent is the (one) lumbar puncture to confirm the diagnosis and to administer convalescent serum. Dr. Macnamara compares this urgency to that of operation for an ectopic gestation.

2. The practitioner is helpless unless some one in his district is prepared to make a microscopic examination of the cerebro-spinal fluid at the bedside, and has been previously supplied with convalescent serum. Dr. Macnamara's figures, which are supremely convincing, come from the use of convalescent human serum put up in sterile ampoules without antiseptic, and her arguments for the avoidance of any irritating factor in the serum to be introduced into the theca are very strong, for intrathecal irritation masks the effect of the serum and makes it hard to assess the need for a further dose. I would suggest therefore that, without delay, arrangements should be made for the collection, pooling, preparation, testing, and distribution of convalescent serum throughout the country, and this distribution, while it must be widespread, should be confined to medical men whose attainments in clinical pathology are undoubted.

3. Organisation is necessary to ensure that any case in which paralysis has occurred is immediately put under orthopædic care.

For the effective working of these three phases of action the approval and coöperation of the Ministry of Health is essential.

In the State of Victoria the Poliomyelitis Committee has issued a pamphlet on behalf of the Government and the metropolitan municipalities. This pamphlet, I think, deserves study in this country, and the substance of it is reproduced below.

A MEMORANDUM ON POLIOMYELITIS

Poliomyelitis is an acute specific infectious disease which occurs sporadically and in epidemics. The infection is probably spread by means of the nasopharyngeal secretions of affected persons or carriers, though bowel discharges may also convey infection. In a few instances localised outbreaks have been traced to infected milk supplies. The virus usually enters the body by way of the nasopharynx, invades the blood stream, causing a systemic infection, and in the majority of cases recovery then ensues—abortive cases. In a proportion of cases, however, after an interval, the central nervous system is invaded and, as a result of interference with the vascular supply by leucocytic aggregation around the vessels of the brain and cord, destruction of some of the cells results. The extent of paralysis which results depends upon the degree of interference with the blood-supply to the anterior nerve-cells. The incubation period is usually five to eight days.

Symptomatology

MODE OF ONSET

In earlier epidemics a number of cases occurred in which the onset of paralysis followed very closely upon the onset of the illness. Fortunately in the epidemics of the last decade this type of case is rare. The majority give a definite history of illness extending over several days with or without an intermission. Draper classifies the mode of onset as follows:—

1. *Fulminating.*—Hyperacute cases in whom paralysis is not preceded by illness. These are uncommon.
2. *Dromedary type.*—In this group, after a period of symptoms of general infection, an interval of apparent recovery precedes the signs of meningeal invasion which usher in paralysis. This type has been common in Victoria in the last five years.
3. *Straggling group.*—In these, slight variation occurs in the symptom complex of a sustained and progressive illness.

GENERAL SYMPTOMS

Fever is usually present, rarely high, and in adults the temperature may not be higher than 99° F. It varies in different localities and at the various seasonal phases of an epidemic. Headache is common and frequently severe. Constipation has been usual. Convulsions are uncommon, repeated convulsions so rare that their occurrence would suggest another diagnosis. Vomiting once has been the rule and in young adults it may be persistent. Symptoms of involvement of respiratory and gastro-intestinal tracts may occur and the complaint of sore throat has been frequent. The tonsils are usually engorged. Such symptoms may occur with any of the acute infections, but, even at this stage, there are certain signs which aid in the differentiation from other diseases. Drowsiness and irritability occur in the same patient, the child lying quietly and apathetically unless disturbed when he becomes apprehensive and resentful. Retention of urine and localised or generalised sweating may occur at this stage.

Fever, vomiting, headache, constipation, drowsiness, and irritability and sweating, and possibly retention are enough to justify a tentative diagnosis of poliomyelitis and, in times of epidemic at least, demand careful observation for the first evidence of meningeal involvement if such is to develop.

STAGE OF MENINGEAL INVASION

Pain may be felt in the back, in the neck, in the limbs and between the shoulders. In older patients it is severe, and in all, aggravated by anterior flexion. True head retraction and opisthotonus may occur as definitely as in tetanus and cerebro-spinal meningitis, but more usually the *spine sign* is present. This sign may be described as a disinclination to flex the spine anteriorly because "it hurts." Most children, if handled patiently, will try to obey when asked to kiss the knees, but if the spine sign be present the attempt is given up because of the pain induced by anterior flexion. *Amoss's sign* is a modification of the spine sign, and it is useful with older children. When placed sitting upon a chair or table and asked to fold the arms the child may attempt to do so, but quickly reverts to the position in which part of the body-weight is borne through the arms, which make two legs of a tripod, the spine being the third. In babies one has to rely on passive flexion to estimate the degree of pain caused by the movement. Popliteal pain is common and may be persistent. Hyperæsthesia may be generalised or local, and it is unaccompanied by swelling. Tremor of the hands is frequently observed. The reflexes are irregular, inequality is common and an increase in the irritative stage is usually followed by loss when the paralysis occurs. Even in the absence of an epidemic the presence of some of these signs, hyperæsthesia, tremor, spine sign and Amoss's sign, pain in the neck, retention, following a general infection as evidenced by some fever, headache, &c., justifies the presumptive diagnosis of poliomyelitis and calls for proof by examination of the cerebro-spinal fluid.

It cannot be too strongly emphasised that lumbar puncture in acute illness, in the absence of definite indication, is unreasonable and unfair, but in times of epidemic of poliomyelitis every instance of illness in which a careful physical examination cannot reveal the cause should be watched carefully for the first evidence of meningeal invasion and, if the signs appear, a lumbar puncture should be carried out forthwith. It is only justified, however, if provision is made for immediate bedside examination of the cerebro-spinal fluid and if immune serum is available. It has been shown to be dangerous to remove a quantity of fluid from a case of poliomyelitis in the preparalytic stage and to delay the administration of serum while that fluid is sent away for examination. For diagnostic purposes 5 c.cm. of cerebro-spinal fluid suffice, and the examination at the bedside can be carried out quickly if the microscope and counting chamber, &c., are ready for use before the lumbar puncture needle is inserted. By this means a second lumbar puncture may be avoided if one desires to give serum intrathecally.

In cases of poliomyelitis the pressure is usually increased, and the fluid is clear or, at most, "ground glass" in appearance. Globulin is slightly increased, but frequently twenty minutes must elapse before reading the ammonium sulphate test. The cells are increased, polymorphonuclear and mononuclear, the ratio of the latter increasing rapidly as paralysis approaches. The chlorides are not reduced, thus furnishing a useful means of differentiation from tuberculous meningitis, which clinically resembles poliomyelitis and in which the cerebro-spinal fluid also shows a pleocytosis. The apparatus for estimation of the chlorides is very simple and the test easy and reliable.

STAGE OF PARALYSIS

It is usual to classify paralysis as follows :—

1. Spinal—affecting the lower motor neurone, the common type.
2. Cerebral—affecting the upper motor neurone, causing a spastic paralysis.
3. Cerebellar—in which ataxia is a predominant symptom.
4. Polyneuritic—in which hyperæsthesia is marked. Anæsthesia is uncommon and if persistent suggests a diagnosis other than poliomyelitis.
5. Bulbar.
6. Ascending cases in which the paralysis spreads upwards.

In epidemics earlier in this century the initial paralysis was usually not exceeded, but in the last few years the tendency to spread over several days and even to extend some weeks later has been observed in Victoria and Tasmania. In all cases the ultimate residual paralysis is less than the initial. The recovery of muscle function, which results in any case, depends upon two factors, firstly, upon number of new cells which survive, as the subsidence of the leucocytic aggregation and œdema around the vessels re-establishes the circulation ; and, secondly, upon the care given to the patient, especially during the first two years.

In cases in which respiration is interfered with the drowsiness of the early stage changes to an alertness, all energies being concentrated upon the effort of breathing. The flaccidity and asymmetric distribution of the paralysis have been dealt with fully in the older literature. Bulbar-spinal types with ocular and facial paralyses are characterised by a profound stupor, but the prognosis for life is better than in the alert children. Mortality in poliomyelitis is not due to toxæmia but to interference with respiration.

Treatment

BY HUMAN IMMUNE SERUM

The prodromal symptoms have been emphasised because the recognition of the disease at this stage is essential for successful treatment by means of serum prepared from the blood of persons who have survived an attack of poliomyelitis.

Immune serum has been prepared for the Committee by the Commonwealth Serum Laboratories, Melbourne. No antiseptic has been added, but the sterility of the serum has been very carefully ensured. The serum is stored in 10 c.cm. ampoules. In order that the method of therapy shall not be brought into disrepute by use in unsuitable cases or by unsatisfactory technique, the committee has arranged for various depôts throughout the country where the serum is held at ice-box temperature in charge of a consultant prepared to carry out the necessary examination of the cerebro-spinal fluid and to direct the administration of the serum.

Serum should be administered intrathecally and intravenously, the dosage usually averaging about 60 c.cm. A second intravenous dose or even a third may be necessary if the response to the first is not immediate. The intrathecal injection should be given slowly and by the gravity method, after withdrawal of a larger amount of cerebro-spinal fluid. When the serum has been used under conditions regarded as essential : (1) without delay between withdrawal of fluid and its administration ; and (2) when given intrathecally and intravenously in adequate dosage, the results of the therapy in Victoria have been in line with those of workers in America and New Zealand, summed up by Aycock as "beneficial as evidenced by (1) a low mortality-rate ; (2) a low average total paralysis ; and (3) a strikingly low proportion of paralysis of the severer grades."

The recognition of the preparalytic stage is essential for successful serum therapy. Administration within 24 hours of the advent of paralysis is justified if the patient is febrile and the supply of serum ample. If given later, when paralysis is stationary, serum is of no value ; while in the spreading cases administration is justified, but is sometimes unavailing.

TREATMENT AFTER THE ADVENT OF PARALYSIS

Lovett has divided the treatment after paralysis has occurred into three phases :—

(*a*) The acute stage—lasting until the disappearance of the tenderness.

(*b*) The convalescent stage—from the end of the acute stage and continuing as long as recovery is occurring—lasting over two years.

(*c*) The chronic stage—when the condition is more or less stationary.

In the acute stage rest should be as complete as possible and nursing disturbance reduced to a minimum. The patient should be nursed on a firm bed, and the limbs kept in position from the onset, by means of plaster beds or improvised splints, to prevent stretching of weakened muscles and development of deformities. Care should be taken to prevent dropping and inversion of the foot or toes, outward rotation of the lower limbs, flexion of the knees and hips, and adduction of the shoulders when the deltoid is paralysed. Facial, abdominal, gluteal muscles, opponens of the thumb are frequently neglected and allowed to stretch with resultant permanent crippling. The most useful splint is one of the double Thomas pattern, with foot pieces and malleable arm pieces, capable of alteration to suit the recovering muscle function.

In cases with involvement of respiratory muscles raising the foot of the bed 2–3 feet and injection of atropine may save a patient from drowning in his own secretions. Feeding should be carried out by the bowel.

In all paralysed cases prolonged immersion in hypertonic saline baths hastens the disappearance of the hyperæsthesia. A brisk aperient, liberal supply of fluid, firm bed, and immediate splinting are the chief points in the treatment of the acute stage. In this second or convalescent stage the treatment may be summarised as follows:—

1. Obtain the early coöperation of the parents for long-continued rest in order to achieve the best result of which the patient is capable.
2. When the tenderness has gone commence muscle re-education. The results achieved by a masseuse, who has had special training in muscle re-education, will be three times as good as those obtained by a well-meaning amateur.
3. Radiant heat and saline baths are useful.
4. Splinting must be constantly supervised and modified in order to prevent stretching of the weaker muscles by the pull of stronger opposing groups.
5. Deformities develop quickly. Scoliosis, hyperextension of the great toe, adduction of the shoulder, and genu valgum are easily corrected at their first appearance and all are preventable.
6. If abdominal muscles are paresed a well-fitting cloth corset should be fitted, even during recumbency, to prevent stretching of the weakened muscles.
7. Standing may be allowed for a few minutes daily after some months, but not if a position of deformity is assumed in order to stand.
8. Sitting and crawling, which favour flexion of hips, and scoliosis and foot-drop should be avoided.
9. The number of cases in which complete recovery is to be obtained in infantile paralysis is greatly extended by keeping the patients from walking during the first year and in many during the second year also.
10. When it is decided that no more improvement is occurring or that the time has come to allow walking, a brace should be worn by any patient when an unnatural position of the limb is assumed in standing or walking.
11. If the patient is of school age, arrange at the outset for regular lessons.

BRITISH PROVIDENT ASSOCIATION

MANSION HOUSE MEETING

On June 8th the Lord Mayor of London presided over a meeting to make known the aims of the British Provident Association for hospital and additional services.[1] The Prince of Wales, in opening the meeting, said that when the British Provident Association launched its fully developed scheme a few weeks ago he sent them the following message:—

"As President of King Edward's Hospital Fund for London, I have had the opportunity of following closely the development of the proposals of the British Provident Association. They are designed to meet the needs of those who now find it difficult to get treatment of serious illness at a price within their means. I believe the cooperative method of the Association to be the right one, and I shall watch the progress of the Association with great sympathy and interest."

Because he firmly believed in the Association, it gave him great pleasure to repeat that message in person and convey to Lord Lloyd, who had agreed to help in launching the scheme, and to his other friends on the Council, his sincere wishes for the success of the venture. Work, which was badly needed, was being done to help people of moderate means to meet the grave difficulties and expense of serious illness. The schemes to this end had not been hastily or suddenly conceived. He had watched them developing and maturing since 1927, when the committee set up by himself as President of King Edward's Hospital Fund investigated the whole matter. That committee believed that there were great possibilities of development in these schemes; he shared that belief, for it was one of our strongest characteristics as a nation that we liked to stand upon our own feet, and not be beholden to others. That was the essence of the British Provident Association schemes. To the question, "How is provision to be made for us?" the answer was, "Provide for yourselves"—an answer that most appealed to British people. In order that these schemes might be successful—and he was confident they could be successful—what was needed was that all concerned should coöperate to solve their own problem. In every organisation, and in every area throughout the country, there were people who felt the difficulty and the needs; if those people would get together, talk the scheme over among themselves, and tell the British Provident Association what their needs were, they would best help one another to find a way out of their present difficulties. In conclusion his Royal Highness said:—

"What I particularly want to impress upon you is this: cooperation and self-help are the motive forces upon which this Association relies—they are the forces which alone can solve the many grave problems that confront the world to-day. And, if they are employed to the full, I am confident they will solve this problem too."

Lord **Lloyd** said that for the working-class patient there were the voluntary and public hospitals; for those who could afford to pay substantial charges there were nursing homes; while in between was that great body of people who had only moderate means. For these the sudden calamity of a dangerous illness or a serious operation would be more than likely to prove a disaster from which their finances could not recover. Two proposals were now being put forward to meet this state of things.

The first was for the provision of sorely needed hospital and nursing home beds at reasonable charges. To provide such a bed would cost on an average £1000, and it would suffice for the sickness needs in one year of rather more than 100 families. Therefore, if each head of a family put up one payment of £10, he had provided his share of the capital cost of the accommodation needed for himself and his wife for life, and for his children till they reached the age of 21. Capital cost was the actual cost of putting up the building and equipping it for the reception of patients. The cost of maintenance would, of course, still have to be provided by the patient, but in these beds the cost of maintenance would be brought down to a figure within the reach of moderate means, and this would be one of the most important advantages to the contributor. The second proposal was for the provision of some means whereby the cost of maintenance during serious illness and of heavy surgical fees could be substantially, if not wholly covered. The Association had for ten years past worked out and tested very carefully schemes on these lines, and the yearly subscription payable had been fixed at the lowest rate that prudence and experience prescribe. These schemes were, in fact, the development which the King's Fund recommended—they were designed to enable people of moderate means to provide the capital cost of the accommodation which they so badly need, and then by yearly subscriptions of an amount suited to their circumstances to lighten the financial burden of serious illness. A thousand beds were immediately required to mitigate the urgency of the problem, and for that 100,000 £10 contributors were needed. These beds would be provided either in or contiguous to existing voluntary hospitals, or else in new and separate buildings.

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[1] The Lancet, May 7th, p. 993.

The scheme had been launched only a few weeks ago, but already very numerous inquiries had been received, while subscribers were being registered on the books in increasing numbers.

Sir ALAN ANDERSON expressed his satisfaction at the financial help and encouragement which had been received from King Edward's Hospital Fund, the City Companies, and from many influential people. He expressed his belief in the success which would attend the scheme, pointing out as an example the remarkable growth of the Hospital Savings Association.

Lord MOYNIHAN, who said he was present on behalf of the surgical profession of the country to give support to the scheme which Lord Lloyd had outlined, referred to the wonderful march of science during the past 50 years, and the great progress that had been made in every department of life. In that march medicine had kept pace, and contrasting past and present he referred to the terrible anxiety of Sir Astley Cooper when he had to remove a small growth from the head of George IV. The hospitals in the Crimea stank a quarter of a mile away, and Lister, who in Lord Moynihan's opinion was the greatest benefactor man had ever had, had spoken of the hospitals of his early career as pest houses. Since then surgery had progressed infinitely, and while Lister had made surgery safe for the patient, it now remained to make the patient safe for surgery. Preparation and treatment might be needed for days, weeks, or months, and for this institutional care was required. The voluntary hospital system was one of the greatest glories of the present day, and in those hospitals the poor obtained the best possible treatment. The people for which the British Provident Association scheme was intended could not avail themselves of these institutions, while the strain on their purses would be too great for them to obtain the same adequate treatment that the poor obtained through charity.

Lord DAWSON OF PENN said that side by side with the decreased capacity of the public to pay there had grown up an increased cost of living and of medical treatment. This was due to the growth of knowledge, which had put at the service of medicine increased methods of investigation of great advantage to the individual and to the community. Diagnosis could be made more accurately, and the treatment not only restored the patient to more complete health but it might often get a bread-winner back to work promptly. These things, however, might be beyond the financial resources of an individual, for the increased efficiency of treatment meant its increased cost. The public was now taking a greater interest in health matters, and endeavours to investigate diseases in their earlier stages were seen to be needed. He believed that no scheme of insurance should confine itself to serious illness; rather it should include within its ambit measures to prevent serious illness. As showing how the cost of treatment had rapidly increased, he said that the expenses of the X ray department in one institution during the last ten years had been multiplied threefold. There was only one way of meeting the needs of the majority, and that was by mass production. There must be insurance, and was not insurance part of the fabric of our daily life? The scheme of the British Provident Association was a pioneer movement, undertaken with full understanding of the difficulties to be faced; it should receive all possible encouragement.

A large and representative group of public men were present, and the meeting terminated informally.

HOSPITAL CONFERENCE AT LIVERPOOL

THE annual joint conference of the British Hospitals Association and the Incorporated Association of Hospital Officers was held at Liverpool from June 9th to 12th.

The subjects for discussion included the need for an active international hospital association, opened (in absentia) by Dr. E. Corwin, of New York; the place of the almoner's department in hospital treatment, opened by Dr. W. H. Maxwell Telling; hospital planning, opened by Col. D. J. Mackintosh; and the ways of maintaining the voluntary hospitals under modern conditions, opened by Major Raphael Jackson.

One of the most topical discussions was that on

Hospital Service for Persons of Moderate Means

This took place on board the *Laurentic* on June 9th and was opened by Major R. H. Thornton, hon. treasurer of the Liverpool Maternity Hospital, from the lay point of view, and by Dr. J. C. Matthews, hon. physician, Liverpool Royal Infirmary, *from the* medical point of view.

THE LAY ASPECT

For purposes of discussion Major THORNTON defined the middle class as the economic class with an income range from £250 to £550 *per annum.* The highest available standard of hospital service, he said, could be commanded only by the very rich or the very poor. Although the voluntary hospitals were no longer purely charitable institutions, they retained a bias in favour of this aspect of their work. The capital and running costs of small private institutions were high and their charges could hardly be less than £7 a week; to the man of moderate means this was a large sum. Moreover, by reason of the immense amount of work which physicians and surgeons performed for nothing, their remunerative working time was curtailed and their fees were consequently nearly double what they would otherwise be. Most voluntary hospitals nowadays provided hospital maintenance and facilities for treatment at low cost, but where this provision was inadequate it should not be impossible for leading insurance companies to finance the erection of middle-class nursing homes, the cost of which would be balanced and a reasonable profit ensured by the premiums payable. Apart from insurance companies, the recent development of municipal hospital services indicated that provision of cheap clinical accommodation might come within their scope. Probably the middle class really needed some form of coöperative scheme analogous to the contributory schemes common among manual workers. The manual worker in the voluntary hospital admittedly got something for nothing. The middle class could hardly expect this, and must be prepared as a group to defray the cost of maintenance and treatment. A number of schemes were in stence but most of them only partially met the ficulty, because there was no clinical accommoda- n provided actually in conjunction with any eme, at rates in conformity with it, and because dical and surgical fees were not usually included. such a scheme was to be secure, an adequate ount of bed accommodation must be available to contributing group, at known charges, if not at rges fixed by the promoters of the scheme. The dical profession must be a party to the scheme in sense of agreeing to a maximum scale of fees. less such a scale was fixed no insurance or ntributory scheme would, in Major Thornton's view, actuarially workable. During recent years the ume of hospital treatment given had increased adily; the medical and surgical work of the country s becoming hospitalised, and the process had taken ce at the expense of the family doctor. It was uable that a middle-class hospital service would y give this process a fresh impetus; on the other nd, cheaper facilities for hospital treatment doubtedly tended to stimulate the hygienic educa- n of the community; this in turn produced a ner intolerance of even minor disease, and an rease in general medical practice. Nor was there thing in a middle class hospital service to dis- rage coöperation between the family doctor and hospital staff. Specialisation of diagnosis and atment was the trend of evolution in medical ence, and the requirements of the specialist would better met in a well-equipped hospital of 100 beds n in 100 stuffy bedrooms in 100 semi-detached las. An income limit would have to accompany agreement limiting professional fees. As a tative outline of a middle class hospital service a large urban area he suggested that a joint mmittee representing the municipal health depart- nt and the local voluntary hospitals and their dical staffs should select a general hospital, of ich one section would be chosen for conversion o the required number of private wards. A leading urance company or the local hospitals' contributory eme, if one existed, would be asked to undertake actuarial and administrative work. Applications enrolment would contain a sworn copy of the plicant's last statement of income to the inland enue. A medical board, in conjunction with the motors of the scheme, would draw up a tariff fees for consultants' attendances, surgical opera- ns, special treatment, and nursing; there would o be a standard tariff for maintenance in hospital, sed on ascertained costs. On these, and on the nomic statistics of the area, the rates of contribu- n would be arrived at. Any physician or surgeon ght offer himself for enrolment as a member of medical staff of the service. It would be open to practitioner to recommend his contributor tients to any member of the staff of the service om he might select.

THE MEDICAL ASPECT

Dr. J. C. MATTHEWS thought that the demand middle-class hospital provision had been aggerated, although he was prepared to admit that existed. The disadvantages of such a service luded the red tape, the lack of the personal touch, d the loss of contact with the family practitioner ich institutional treatment involved. Mr. Frank ans, speaking recently at a Round Table luncheon d said: "If, the moment a patient is seriously with pneumonia or appendicitis, he is shipped to a hospital and out of the doctor's hands, where is the interest in the practice of medicine? . . . On the other hand, if a doctor can take a patient into a nursing home and look after him himself, the specialist doing his part of it, you have there the best of consultative work; you have the doctor's knowledge of the patient and the consultant's knowledge of his special branch." Among the schemes shown him on paper, Dr. Matthews said it had been too readily assumed that a surgical operation was the only contingency to be contemplated. Medical cases formed a substantial minority and could not be ignored, while a certain number of cases required more or less elaborate clinical investigation. Though the income limit to be imposed, and the charges to be made for medical attendance must come under discussion in drawing up schemes, there were other matters on which the medical profession would wish to be heard. It was important that the patient should have the widest possible choice of consultant, a choice in which he would be well advised to consult his family doctor. The rules of a hospital providing middle-class accommodation should not only permit the continued attendance of the family doctor, but should limit as little as possible the employment as consultant of any practitioner able to satisfy one or more of the following conditions: (1) that he was holding or had held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service to be rendered, and had had actual recent experience in performing such service; or (2) that he had made special academic or post-graduate study of a subject comprising the service to be rendered, and had had actual recent practice, as already said; or (3) that he was generally recognised by other practitioners in the area as having special proficiency and experience in a subject comprising the service to be rendered.

In large cities, such as London, Liverpool, Birmingham, or Manchester, the demand for middle-class beds might be sufficient to justify the establishment of separate institutions. In the smaller cities and county boroughs the demand would only be sufficient to warrant the provision of beds in association with a local voluntary or municipal hospital, the special equipment and resident staff of which would be used for the patients in such beds. The income limit difficulty could be met partly by providing graded accommodation, the medical fees in the lower grades being on an agreed scale, and those in the higher grades being a matter of private arrangement between doctor and patient. At St. Chad's Hospital, Birmingham, patients paid either 6 guineas a week plus fees for medical attendance, or a composition fee not exceeding 12 guineas to cover everything; this hospital appeared to be conspicuously successful. At Newcastle a block of the Royal Infirmary had recently been opened as a hospital for paying patients under several grades. As long as a hospital was not making a profit more than sufficient to pay a moderate dividend on capital expenditure, and to provide for justifiable improvements and additions, it was not unreasonable to ask doctors to adjust their fees to the means of the patients. He thought that at present most doctors were in favour of keeping the charge for maintenance and the charge for professional attendance entirely separate, but he appreciated the fact that promoters of contributory schemes wanted to know in advance what the cost of appropriate services would be in order to calculate premiums. The British Provident Association published scales of fees payable for surgical operations; these were in the nature of grants-in-aid to the patient who would have to meet surgeons' fees, but it could be assumed that they had been drawn up with professional assistance and were commensurate with actual charges. It must be evident that the provision of hospital accommodation and the promotion of insurance schemes should be kept separate from one another. No hospital should undertake actuarial risk. There should be no reservation of accommodation for the exclusive use of subscribers to a scheme, nor should subscribers be restricted in their choice of accommodation. A grant-in-aid scheme, such as that of the British Provident Association, possessed the elasticity by which the needs of the subscriber could be met.

MEDICINE AND THE LAW

University of Durham College of Medicine : An Inquiry into Administration

Prof. Rutherford Morison's letter, published in our columns on June 4th (p. 1229), has not failed to attract much attention. Clearly there is plenty of support in Newcastle for the view that on the one hand there should be no delay in the impending inquiry into the administration of the College of Medicine and the circumstances of Prof. Hutchens's dismissal; and that, on the other hand, out of respect for the possible recommendations of the tribunal, the College should hesitate to commit itself meanwhile by making an immediate appointment to a professorship of bacteriology. A letter by Prof. H. V. A. Briscoe, professor of inorganic chemistry at the Armstrong College, printed in the Newcastle *Evening Chronicle* of June 8th, shows that, apart from the unfortunate dispute in Prof. Hutchens's case, there is at Newcastle an atmosphere unfavourable to the successful working of academic institutions. It would obviously be improper to prejudice the inquiry by any one-sided version of the present controversy. It seems possible, however, to state the two sides of the case as disclosed in the legal proceedings initiated and lately abandoned by Prof. Hutchens against the College council and Sir Robert Bolam. For this purpose the statement of claim and the defence in those proceedings are summarised here, though it is needless to remind our readers that the legal aspect is not the only aspect that matters, and that these formal legal pleadings are not intended to convey the maximum of information but merely to define the technical issues which a court of law is asked to decide. These legal documents necessarily take no account of many matters of general interest and importance—such, for instance, as the security of tenure in academic appointments or the proper policy of a medical school.

Prof. Hutchens issued his writ on Oct. 15th, 1931, against the University of Durham College of Medicine at Newcastle and against Sir Robert Bolam on behalf of himself and all other members of the College council. His statement of claim set forth the following facts and contentions. He says he was appointed Heath professor of comparative pathology in 1908, and (under University Statute 59) he was a professor of the University so long as he held that chair. It was a whole-time chair; the professor's duties were (*a*) to deliver the lectures and carry out the instructions on pages 48, 49, and 55 of the College calendar, and (*b*) to conduct the work of the bacteriological diagnosis department, with liberty to undertake private special investigations subject to the council's approval. The stipend was £600 (£160 from the endowment and £440 added by the College). He had previously for three years been working at the College, and had on Jan. 1st, 1907, been appointed lecturer in comparative pathology and bacteriology for 12 months; but he contends that he never held this lectureship after his appointment to the Heath chair. In October, 1921, the College council, adopting a report of the finance committee, resolved (inter alia) that his salary be £1400 a year in lieu of his then salary and fees for private work. Prof. Hutchens claims that he performed these duties and received this salary as Heath professor and that his professorship (whether of the University or in the College or both) was not determinable by the College council. On March 13th, 1931, the council passed a resolution that he be given six months' notice terminating his engagement as lecturer in comparative pathology and bacteriology in the College of Medicine, such notice to terminate Sept. 30th, 1931. He received this notice signed by Sir Robert Bolam. He contends that he was not, and for 23 years had not been, lecturer as thus described, and that the notice was invalid to determine his office as professor of comparative pathology. He complains that the College and its council wrongfully treated the notice as valid, withheld his salary, and excluded him from his duties, and he contends that this was equivalent to dismissal; he claims that such dismissal is invalid and wrongful, no effective notice having been given, and he himself having been guilty of no misconduct or breach of duty. He also complains of having been wrongfully excluded from membership of the council, from the academic board of the College, and from the court of governors. Finally he asks the court to grant the following remedies: (1) a declaration that the resolution of March, 1931, was invalid and ineffective to end his appointment as Heath professor; (2) a declaration that he is entitled to membership of the College council, academic board, and court of governors; (3) an injunction to restrain the College, Sir Robert Bolam, and other members of the council from attempting to exclude him from the meetings and proceedings of these bodies; (4) damages; (5) further or other relief; and (6) costs.

In their formal defence the defendants admit certain matters in the statement of claim and deny others. They rely on certain statutes made under the University of Durham Act of 1908, particularly clauses 24, 25, 30, 54, 57, and 59. Under these they claim that the senate of the University can define the terms and conditions, duties and remuneration of offices, and can remove any professor (except the professor of divinity and Greek) from privileges and membership of the University; the council of the Durham Colleges has power to exercise full control over the teaching in the Durham division, and the medical college at Newcastle has similar power and can regulate its constitution and government under its articles of association. The defendants refer to clause 50 of the articles, empowering them to appoint and fix the remuneration of professors and lecturers and to remove these members of the staff if removal is sanctioned by at least one-half of the entire council specially summoned. They say that the College, by letter of December, 1906, appointed the plaintiff lecturer in the department of comparative pathology and bacteriology for a year from Jan. 1st, 1907, and that this appointment was (or must be deemed to have been) renewed thereafter. They contend that the resolution of March, 1908, in effect combined in the person of the plaintiff the offices of Heath professor of the University and of lecturer or head of the department of comparative pathology and bacteriology in the College; the plaintiff, while Heath professor, was liable to the College to perform the duties of this lectureship from year to year as directed by the College. They argue hat the plaintiff's duties were substantially altered n 1921 and 1922 and were further defined in 1928 and 1930 as the minutes of the council's meetings will how. They deny that they have terminated his appointment as Heath professor; they say he is entitled to £167 13*s.* per annum from the endowment. They claim that the notice given to Prof. Hutchens n March, 1931, was valid to determine his office as lecturer or head of the department of comparative pathology and bacteriology in the College. They admit hat he has been dismissed from his office and engagement with the College, but they deny that such dismissal was wrongful; they say the notice was reasonable and proper. They contend that the plaintiff was entitled to be a member of the academic board *qua* lecturer and head of the said department, but not *qua* University professor. His membership of various College bodies ceased when his appointments with the College were terminated. They contend that the defendant council and Sir Robert Bolam have at all times acted bona fide and in the proper exercise of their powers. Lastly, while denying liability, the defendants bring into court the sum of £1232 7*s.* (i.e., 12 months' salary at £1400 less the annual income from the Heath endowment) and say that such sum is in any event amply sufficient to cover any claim he plaintiff may have.

As soon as this defence had been delivered, Prof. Hutchens had choice of three courses of action. In the first place he could go forward with his action, but it was naturally felt that, while litigation was impending and his legal claim was sub judice, the much desired inquiry into the affairs of the College could not proceed. Secondly, he could take advantage of the final paragraph in the defence and could pocket the sum of £1232 7*s.* paid into court by the defendants; the legal effect would be that his action would be discontinued and could never be reopened but the defendants would have to pay his costs. Thirdly, he could discontinue his action without taking the money out of court; in this event, though he would be at liberty to recommence legal proceedings at any future date, he would expose himself to the risk of having an order for costs made against him, he would throw away the chance of making the defendants pay his costs up to date, and he would place himself at the mercy of the governors as regards any payment to be made to him and generally as regards the way in which his case could be dealt with as the result of the inquiry. Prof. Hutchens chose the third course, voluntarily depriving himself of the right to take the money out of court or to obtain his costs. His formal notice of discontinuance was accompanied by a letter from his solicitors making it clear that the claim was withdrawn because Prof. Hutchens's object had been achieved, inasmuch as the governors of the College had decided to hold an inquiry into the whole administration of the College.

These legal proceedings being now out of the way, there seems nothing to obstruct the opening of an impartial inquiry which, in the interests of the medical school at Newcastle, its students and staff, should be as prompt and thorough as possible.

Hospital Patient's Allegations of Negligence Fail

On June 9th and 10th the Lord Chief Justice and a special jury heard the action of Russell *v.* Groves and Lancaster. In May, 1930, the plaintiff was brought to the Bristol General Hospital after a bicycle accident; his right leg was found to be fractured. He now alleged that Dr. L. Lancaster (senior resident officer) on the instructions of Mr. Hey Groves (senior honorary surgeon) had the leg encased in plaster, and that, as a result of no "window" being left in the plaster, the fact was unknown that the leg became septic from a wound in the heel; the poison spread and the leg was amputated first at the knee and later at the middle of the thigh. Mr. Maurice G. Fitzgerald, honorary surgeon to the Teddington and Hampton Wick Cottage Hospital, who attended the plaintiff on his return home from Bristol, described the plaintiff's complaint of pain in his heel and the discovery (after a "window" had been cut in the plaster) of the septic condition of a wound at the back of the heel; in spite of drainage treatment, the first amputation was found necessary. Mr. James E. H. Roberts, of Harley-street, described the second amputation. In cross-examination he agreed that eminent surgeons did not leave a "window" in the plaster encasing a fractured limb; he would not regard it as negligence not to leave an aperture in the plaster. Although these answers might seem to have destroyed the plaintiff's charge of negligence, the Lord Chief Justice did not stop the case but left it to the defendants to call their evidence on the other side. Mr. Hey Groves said it was the common practice among surgeons to case the whole of the limb. Sir Robert Jones, Mr. C. M. Page (surgeon to St. Thomas's Hospital), and Mr. Russell Howard (consulting surgeon to the London Hospital and the Poplar Hospital) agreed with Mr. Hey Groves's evidence. The witnesses said it was safer and better to cover up a wound with plaster than to leave a "window"; there was a bigger danger of infection if a "window" were left, because the exposed part of the limb might bulge, become moist and discharge. The Lord Chief Justice pointed out to the plaintiff's counsel the difficulty of establishing the charge of negligence in the face of the evidence of these expert witnesses. The action was nevertheless continued on the second day when Dr. Lancaster was called into the witness-box. During his examination counsel for the plaintiff intimated that, after hearing both the defendants and surgeons of great eminence, he had advised his client that it was clear that there was no negligence on the part of either defendant. The plaintiff thereupon submitted to judgment, and the jury, on the instructions of the judge, found a verdict for the defendants. The Lord Chief Justice, observing that it was idle to expect that any verdict could be found against either defendant, gave judgment against the plaintiff with costs.

Once again we have a case where the plaintiff's advisers are convinced by the defendant's evidence and withdraw their allegations after putting the defendants to the expense and annoyance of legal proceedings. It seems a pity there is no simpler method of satisfying a plaintiff that his charges are groundless.

MILLER GENERAL HOSPITAL: ANNUAL REPORT.—The annual report expresses great satisfaction that it has been possible to carry on the hospital's work without having to close any of the beds. This however was only made possible by the exceptional legacies received during 1931. The expenditure was £41,557 as compared with £39,614, an increase largely accounted for by renewals and repairs to buildings and plant. The income was £42,769, of which no less than £8722 came from legacies; without them there would have been a deficit of £6510. The number of patients admitted into the wards was 2335; the average stay of each patient was 21 days. There is an urgent need for a new out-patient department, the present accommodation being quite inadequate.

CORRESPONDENCE

THE INCREASE IN CANCER OF THE LUNG

To the Editor of THE LANCET

SIR,—The leading article in your issue of June 4th refers to the increasing incidence of cancer of the lung as a fact. A similar view was put forward by speakers at a recent discussion at the Royal Society of Medicine. With due respect both to yourself and to the speakers in question, I would suggest that this proposition is, as yet, not proven; and that, even if it were, certain qualifications would be necessary in its enunciation for its full significance to be appreciated.

In the first place there is the influence on statistics of increase of medical knowledge and of improved methods of diagnosis. This point needs no labouring. One is more likely to discover a condition if one is familiar with its existence; and also if one has at hand the various diagnostic instruments to supplement data derived from the senses and to differentiate one condition from others which may simulate it. In the third edition of "The Principles and Practice of Medicine" (Fagge and Pye-Smith, London 1891, vol. ii., p. 117, et seq.) we read that "the physical signs caused by mediastinal new growths are due chiefly to their size. . . As may be imagined such large growths . . . cause great dullness on percussion. . . The other physical signs of mediastinal tumours are very uncertain." No one, I imagine, would presume to suggest that we are better clinicians than our predecessors of 40 years ago; and we have therefore no reason to think that we should be in any better position than they were had we to rely on physical examination and such instrumental aids as were then available. Such progress is cumulative; and those who, as students, have had their attention directed to the condition by seeing cases in hospital are more likely to suspect its presence in cases encountered later. We must remember, too, that even now it is not unknown for patients diagnosed—and rightly so—as suffering from empyema, bronchiectasis, or tuberculosis (with tubercle bacilli in the sputum) to be found at operation, or on post-mortem examination, to have a pulmonary new growth. Is anyone prepared to say what proportion of those who in former times appeared in hospital statistics and death returns under these three headings—or even as acute or chronic bronchitis, or pneumonia—would now appear under a different heading?

It is sometimes contended that, even if the clinician of former years were found lacking the pathologists were then at least as good as those of to-day, and would have unmasked their contemporaries' failings. But demonstrators though they be of the soberest of sobering truth, how could they be expected to demonstrate what did not come to their post-mortem rooms? If patients are considered to be suffering from a disease which is not suitable for treatment in the wards of a hospital they do not gain admission, or if admitted do not stay indefinitely. The criteria of suitability have many variable factors, including the state of medical knowledge. Hospital statistics, in fact, are based only to an approximate extent on the principle of the "fair sample" which statisticians require to be present before they will admit the validity of any deductions. Death returns also, although they show the number of deaths known to occur in any given year, must vary as to classification of causes with the increase of our knowledge. Does anyone suggest that no patient died from lymphadenoma before the time of Hodgkin, or from tuberculous caries of the spine before Pott described that condition? I ask that question because I recently heard a speaker at a meeting of a medical society contend that nephritis had been on the increase ever since the first issue of the Registrar-General returns in 1837. He did not mention the fact that Richard Bright did not publish his famous "Reports of Medical Cases" until 1827.

Two other points remain to be mentioned. The first is that the National Health Insurance scheme has given large sections of the community more facilities for medical aid than was previously available to them. Hence earlier detection and hospitalisation of cases—and further vitiation of comparisons based on statistics of the present and former times.

The second point is that Dr. J. C. Dunlop, formerly Registrar-General for Scotland, after examining the statistics of causes of death in Great Britain for the period 1911–1928, came to the conclusion that approximately three-quarters of the observed increase in the death-rate from cancer (all forms) could be accounted for by the ageing of the population, leading to larger numbers *living in those ages in which* the cancer death-rate is high. He also gave as his opinion that the remainder of the increase, subject to an exception in the case of mammary cancer, could with reason be attributed to the better recognition of cancer. (Trans. Med. Chir. Soc. Edin., 1929–30, xliv.)

I am, Sir, yours faithfully,

J. A. STRUTHERS.

Wimpole-street, London, W., June 10th, 1932.

APPENDICITIS

To the Editor of THE LANCET

SIR,—In the discussion on the treatment of acute appendicitis which Sir James Berry's address has aroused I suggest that actual experience as recorded day by day in a surgeon's life is of more value than impressions and recollections, for these are particularly fallacious when the disease is one, as in this instance, which varies so enormously in its severity and in the course which it runs and which above all is distinguished by its treachery.

I have for some years kept my own notes on all my cases of acute appendicitis whether in hospital or in private practice; these notes have all been made by me at the time the patient was under treatment, and present therefore a more uniform and reliable source of information than those obtained by searching through hospital records months or years after the patient has been dealt with. In the belief that these are accurate and have certainly not been compiled with any idea of discrediting the expectant treatment of acute appendicitis (of this my own colleagues in Manchester will, I am sure, acquit me) I submit them to Sir James Berry and those who share his views.

In a consecutive series of 334 cases of acute appendicitis which have been under my care in the past few years, and from which no cases are excluded except a few who were clearly settling down when first seen and one patient (not operated upon) who was dying of appendicular general peritonitis 56 hours after the onset: of these 334 cases, 260 were treated by immediate operation and 11 of these died (case-mortality = 4 per cent.). In the other 74 cases expectant treatment was attempted, always in hospital or nursing home, and of these six died (case-mortality = 8 per cent.). The 260 treated by immediate operation include 87 early and unperforated appendices many of which however were gangrenous, and in this subgroup there was one death and that due to pulmonary embolism ten days after operation. The 74 patients with whom expectant treatment was attempted were mainly cases of (apparently) localised peritonitis which I believed likely to settle down or at the worst to form a well-localised abscess; a few of them were submitted to this treatment because, by reason of age, obesity, or bronchitic troubles, they were regarded as poor subjects for an abdominal operation in the presence of an active infection. But in no case was the gravity of the disease itself regarded as an indication for expectant treatment; the group of 260 immediate operations is loaded with the whole of this class. Of the 74 patients treated on expectant lines, 39 settled down without operation of any kind and, after allowance has been made for the interval appendicectomy which nearly all underwent subsequently, it can confidently be reckoned that these suffered less disturbance and a shorter period of incapacity and caused less work to the nursing staff than they would had they been operated upon in the acute stage. On the other hand 35 did not settle down; in many of these operation was resorted to within two or three days on account of exacerbation of the disease and deterioration in the condition of the patient; in the others and at a rather later stage operation for evacuation of an abscess was performed. The six deaths, of course, occurred in these 35 patients. It may be said that greater faith and persistence in expectant treatment might have reduced the number of these deaths, but I am very sure that some of the patients who survived only did so as a result of timely interruption of expectant treatment by the decision to operate; several times it was plain to me that, though the patient recovered, the delay in operating had narrowed his margin of safety and lengthened his period of illness.

It is impossible here to discuss the many points raised by such figures, but from a consideration of them and of my much larger previous experience I feel strongly that Sir James Berry advocates the expectant treatment of acute appendicitis on much too generous a scale; that there is an important place for this type of treatment I firmly believe and advocate, but it is a very limited place and one which should be marked off by definite boundaries. Sir James Berry in his too optimistic view of the prospects of expectant treatment naturally fails to make adequate recognition of the importance and value of the early operation. I do not think any surgeon who has had extensive personal experience in this branch of surgery during the whole of the past 25 years can doubt that the very early operation for acute appendicitis represents one of the greatest advances in abdominal surgery during this important period of its evolution. It is in consequence of the increasing recognition of this that it is now usual for a surgeon to be called in within a few hours of the first symptom. If the annual statistics for the past ten years of any large hospital are examined I believe it will invariably be found that the case-mortality of acute appendicitis has substantially fallen and that this reduction is due to the increasing proportion of early cases. Certainly the statistics of the Manchester Royal Infirmary (where some 800 cases are dealt with annually) show this.

In conclusion, in so strongly advocating the early operation I do not wish to appear to suggest that this should be performed in every case without regard to the condition of the patient (his age, health, and build) or to the personal resources and equipment of the surgeon.

I am, Sir, yours faithfully,

Manchester, June 7th, 1932. H. H. RAYNER.

THE PREVALENCE OF APPENDICITIS

To the Editor of THE LANCET

SIR,—In continuation of my letter last week may I add that the number of cases of appendicitis under treatment at the London Hospital for the year 1930 was 472. For this information I am indebted to Mr. Stanford Howard.

I am, Sir, yours faithfully,

Harley-street, W., June 13th, 1932. W. H. BATTLE.

TRANSURETHRAL PROSTATECTOMY

To the Editor of THE LANCET

SIR,—In Dr. Hugh Cabot's article (THE LANCET, June 11th, p. 1243) the following is the opening paragraph:

> "Without going too far back into the more or less accidental performance of prostatectomy, one may date the intentional operation for removal of obstruction from those put forward almost simultaneously by McGill in this country and Belfield in the United States. These were in the later 'eighties of the last century. They were not prostatectomies as we now think of them, and though performed by the suprapubic route, were only partial operations and for this reason only partially successful."

It appears to be impossible to make the profession realise that though McGill's work began with nibbling operations upon the prostate, with removal of projecting lobes, and with other partial excisions, it culminated in the removal of the whole prostate, by precisely the same method as we employ to-day. I am sure my old friend Dr. Hugh Cabot does not desire to do injustice to a great surgeon. He would be at once convinced as to the truth of the claim made for McGill by examination of the specimens removed at all his operations; they are still in the Leeds Museum. We possess also the old wooden table upon which McGill placed his patients in the Trendelenburg position which, as many forget, was introduced not for gynæcological but for vesical operations.

I am, Sir, yours faithfully,

MOYNIHAN.

Portland-place, London, W., June 11th, 1932.

To the Editor of THE LANCET

SIR,—Your leading article suggests that transurethral prostatectomy is not employed by surgeons in this country. This is not the case. The indications for this treatment were given in a paper published by me in the *British Medical Journal* in 1926 (vol. i., p. 94). I have found no reason to alter my views. Though I have tried all the newer instruments, I still employ my old technique. All the cases have done well and there has been no tendency for a stricture to form. But it is most important to select suitable cases. I am certain it is useless where the lateral lobes are involved and also in malignant disease. Of the cases with prostatic symptoms which I see in consultation I advise operation in about 60 per cent. And of cases operated upon, transurethral diathermy is employed in about 20 per cent. That is the result of 14 years' experience of this work. If the method is employed for unsuitable cases, it will fall into disrepute. For, when there is a general adenomatous enlargement of the prostate, the obstruction is throughout the urethra. It is difficult to remove it; and, as the pathological condition is a progressive one, it is liable to recur.

I am, Sir, yours faithfully,

Cardiff, June 12th, 1932. T. E. HAMMOND.

DR. ALFRED COX TESTIMONIAL FUND

To the Editor of THE LANCET

SIR,—We feel sure that many of your readers would like to be reminded that the end of the current month closes the term of contribution to the above fund, which is being raised as a token of recognition of the devoted services of Dr. Alfred Cox to the interests of the medical profession.

The response has been good; the excellent portrait, by Sir Arthur Cope, is in the Royal Academy, and the committee are now especially concerned that a larger number of names may be inscribed in the presentation book, which we know Dr. Cox will particularly value.

We would urge those who have not already subscribed to send in their names and addresses, together with a small contribution (in no case to exceed 10*s*., and the amount does not appear in the list) to the hon. treasurer of the British Medical Association, Tavistock-square, W.C.1.

We are, Sir, yours faithfully,
HUMPHRY ROLLESTON,
Chairman, General Committee.
EWEN J. MACLEAN,
June 6th, 1932. Chairman, Executive Committee.

*** Dr. Cox's claim on the respect and regard of the medical profession is such that no words from us could make it stronger. Intending subscribers to the Testimonial Fund, which should imply all medical men who have not yet subscribed, will surely heed the request here made.—ED. L.]

TRAINING IN TUBERCULOSIS

To the Editor of THE LANCET

SIR,—It is to be hoped that Dr. Davidson's timely letter and the discussion it has aroused will result in some practical solution of a grave problem. So far back as 1912, in the report of the Departmental Committee on Tuberculosis, special reference was made to medical education. The Committee were of opinion that additional facilities should be afforded to medical students and practitioners to acquire familiarity with the methods of diagnosis of tuberculosis, more especially in its earlier manifestations, and with its treatment. And they made these recommendations, among others:

1. Medical students and practitioners should be afforded facilities to attend at tuberculosis dispensaries and sanatoria.
2. It is advisable that the tuberculosis dispensaries should, where possible, be directly associated with schools of medicine.

Despite these recommendations, medical training in tuberculosis is still deplorably bad and, with few exceptions, there is little or no coöperation between hospital and dispensary. Unless steps are taken to remedy this lack of organisation, the present mortality figures (over 700 deaths per week in England and Wales alone) of a preventable disease are likely to remain at a standstill.

There is another point on which I would lay emphasis. At the tuberculosis dispensaries there is an abundance of clinical material illustrative of all diseases of the respiratory tract, including many of the most important non-tuberculous conditions. My own experience of work at a chest clinic is that the latter form 50 per cent. of the new cases sent up for opinion, though they are frequently labelled as tuberculous. Students would therefore have the best opportunity at such clinics of learning the differential diagnosis of pulmonary disease with special reference to pulmonary tuberculosis.

The machinery for coöperative organisation exists, and only needs to be put in motion. It may be that the hospital authorities would demand some alterations as regards the details of dispensary work, and indeed I believe that some reorganisation of the dispensary system as such is necessary, and that I have already advocated (*Brit. Jour. Tub.*, July, 1931).

I am, Sir, yours faithfully,
Harley-street, W., June 6th, 1932. PHILIP ELLMAN.

THE OBSTETRIC FORCEPS AND ITS USE

To the Editor of THE LANCET

SIR,—I have read the very interesting paper written by my late colleague Mrs. Dobbin Crawford and I should like to comment upon the sentence:—

> "The application of forceps is only a success—as stated by Berkeley—when their use leaves the mother no worse off than she was before their application, and when the child is born alive."

In my opinion these words under-estimate the high standards which Mr. Comyns Berkeley, Mrs. Crawford, and all other expert obstetricians demand of themselves and, therefore, are not the best teaching to give to students. From the baby's point of view the success of a forceps operation is measured not merely by his life but by his health; he must be born alive *and undamaged.*

Neonatal medicine has made great strides in recent years and the status of the new-born infant is advancing rapidly; it is possible to record great improvements in both diagnosis and treatment of the various injuries which may be suffered by the baby during delivery. But prophylaxis must always be the main object in view, and it is essential that students should be taught the ideal towards which they must strive. No student could do better than learn, as so many have in the past, by attending Mrs. Crawford in her practical work; but those who can learn from her only by reading this paper might fail to grasp the full meaning contained in the one sentence to which I call attention. I am, Sir, yours faithfully,

Liverpool, June 13th, 1932. NORMAN B. CAPON.

THE PREVENTIVE SIDE

To the Editor of THE LANCET

SIR,—The medical profession are frequently criticised for paying insufficient attention to the preventive side of medicine. Sir Arthur Newsholme, Sir George Newman, and now Mr. Somerville Hastings are prominent in stressing this failure. Let us examine this criticism a little more closely.

What diseases are, in fact, preventable wholly or in part? Excluding diseases preventable by public sanitation, port quarantine, good housing, and sufficient food, there remain a moderate number of preventable diseases which can be grouped as follows:

Group I.—Small-pox, diphtheria, and possibly tuberculosis, which can be prevented by immunisation.

Group II.—Industrial diseases.

Group III.—Venereal disease, which can largely be prevented by individual prophylaxis.

Group IV.—Hereditary mental disease and deficiency, which can in part be prevented by sterilisation and segregation.

Group V.—Diseases which are essentially within the province of general practice, such as arise from focal sepsis, overfeeding, overdrinking, oversmoking, obesity; from improper food, clothing, and footwear; from obstetrical injuries.

Now practitioners are constantly urging their patients to have their infected teeth or tonsils dealt with. How often do patients take their advice before the actual onset of rheumatism? Very seldom in my experience. To point out the disfigurement from bad teeth is ten times as effective. How often do patients diet themselves rigorously to prevent the onset of obesity? Very seldom. Yet, when fashion so decrees it, everyone diets at once. It is the same story with foot deformities, the result of narrow pointed shoes. The individual is equally indifferent to possible future ill-health to himself or his children resulting from small-pox, diphtheria, industrial diseases and accidents, and mental diseases. An exception is venereal disease, for the prevention of which individual prophylaxis has had a very definite success.

The lesson is that the individual will only bestir himself for an immediate danger to health, but more distant dangers are ignored and probably always will be. Is the medical profession to be blamed for this fundamental trait in human beings? The State can compel the individual to take the necessary precautions as is done in industrial diseases and, half-heartedly, in small-pox. But the record of our State medical officials is none too brilliant. They did nothing for the prophylaxis of venereal disease, being content themselves to treat end-results, and in the prevention of the increasing menace of mental deficiency and insanity their record is bad. They obstructed the dissemination of contraceptive knowledge to the poor.

I am, Sir, yours faithfully,

Bridlington, June 13th, 1932. P. D. H. CHAPMAN.

THE KING'S COLLEGE HOSPITAL SCHEME

To the Editor of THE LANCET

SIR,—The attention of the medical board of King's College Hospital has been directed to the article published in your issue of May 28th (p. 1172) and to subsequent correspondence upon this subject. While not admitting the accuracy of all the statements made, I beg to inform you that the arrangements are under discussion by the committees concerned. The steps which are being taken will, I confidently hope, remove the objections raised. I need not assure you that the medical staff at King's College Hospital would strongly discountenance any procedure not in accordance with the traditions of medical practice.

I am, Sir, yours faithfully,

W. GILLIATT, M.D., F.R.C.S.,
Chairman of the Medical Board, King's College Hospital.

June 14th, 1932.

FREE TREATMENT AT VENEREAL CLINICS

To the Editor of THE LANCET

SIR,—While endorsing the remarks of Dr. Wansey Bayly and Dr. Browdy, I am inclined to add the trite comment that in lean periods, which we have had before, it is possible to become over-pessimistic. A greatly esteemed surgeon and teacher, interested in social phenomena, used to point out to his classes the close relationship existing between the rise and fall in the incidence of venereal disease and similar movements in the graph of business activity. In its economic effects business depression attacks all fluctuating incomes, including those of medical and surgical specialists without exception, dentists, barristers, architects, and others. It is undoubtedly true that there are V.D. patients attending public clinics who in ordinary circumstances would demand something better; but when a pukka chartered accountant sells you your ticket for the greyhounds is it, after all, so very surprising?

A reform considerably overdue is the removal of the crude V.D. advertisements from public lavatories, an illustration of bureaucratic medicine at its worst. Unless meant to direct strangers in London or elsewhere the posters serve no useful purpose, for they offend many well-disposed persons and by promoting ribald remarks are very largely self-destructive, cost the public something, and constitute a standing offence to many decent-minded people. Large numbers of children visit public conveniences, and I know of nothing more embarrassing than trying to evade the searching questions of small boys and girls curious to know. "What are secret diseases?" and "What sort of a place is St. Swithin's Hospital?"

I am, Sir, yours faithfully,

H. D. L. SPENCE.

Great Russell-street, W.C., June 13th, 1932.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 4TH, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 49 (last week 68); scarlet fever, 1502; diphtheria, 709; enteric fever, 23; acute pneumonia (primary or influenzal), 675; puerperal fever, 54; puerperal pyrexia, 96; cerebro-spinal fever, 51; acute poliomyelitis, 4; encephalitis lethargica, 14; dysentery, 13; ophthalmia neonatorum, 102. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 7th–8th was as follows: Small-pox, 81 under treatment (last week 84 under treatment and 2 under observation); scarlet fever, 1526; diphtheria, 1317; enteric fever, 10; measles, 2211; whooping-cough, 396; puerperal fever, 15 (plus 5 babies); encephalitis lethargica, 227; poliomyelitis, 3; "other diseases," 99. At St. Margaret's Hospital there were 15 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 73 (29) from measles, 7 (3) from scarlet fever, 32 (10) from whooping-cough, 21 (5) from diphtheria, 59 (11) from diarrhœa and enteritis under two years, and 33 (5) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Manchester and Ipswich. Liverpool reported 18 deaths from measles and 6 from diphtheria. Four fatal cases of whooping-cough occurred at Liverpool, 3 each at Birmingham and Walsall.

The number of stillbirths notified during the week was 294 (corresponding to a rate of 39 per 1000 total births), including 40 in London.

FATAL CASE OF SMALL-POX.—The case in which small-pox was mentioned as the cause of death in the return for the week ended May 28th was that of a man, aged 56, admitted to Queen Mary's Hospital, Sidcup, on April 19th, from Lambeth Hospital, where he had been since March 9th suffering from myeloid epulis, which was being treated with radium. On arrival at Queen Mary's Hospital, Dr. C. Ellingworth informs us, he had considerable radium reaction about the face and swallowed food with difficulty. He had some pyelitis and had been treated with hexamine. On May 3rd he complained of headache, and he was found to have a temperature of 103° F., with some slight abdominal pain and crepitations at the base of both lungs. The urine was free from albumin. On the morning of May 7th he developed a papular rash on the forehead and hands which was rather mixed up with the radium irritation. Dr. H. M. Pereira, who was called in consultation, confirmed the diagnosis of small-pox, and the patient was removed to Longreach Hospital, where he died. Dr. D. M. Connan tells us that the cause of death was certified thus: 1. (*a*) Myeloid epulis. (*b*) Pyelitis. 2. Small-pox discrete; vaccinated in infancy.

THE SERVICES

REVISION OF THE ARMY MEDICAL SERVICES

REORGANISATION in the Medical Services of the Army has been announced which should result in consolidating and extending the teaching, research work, and the professional opportunities of officers of the R.A.M.C. and in enhancing the status of the Royal Army Medical College. After the Great War a great advance was made in coordinating the professional activities of the Corps by the creation of Directorates of Hygiene and Pathology, with Advisory Committees of eminent civilian doctors, and by the appointment of a Consulting Physician and a Consulting Surgeon to the Army from among the serving officers of the Corps.

The War Office statement continues :—

> Owing to the large size of the Army at that time, these directorates and appointments were located at the War Office as part of the staff of the Director-General, Army Medical Services. Now that the size of the Army has been reduced and more largely concentrated in the principal military stations, the organisation of the medical directorate has permitted of some decentralisation and the opportunity has been taken to concentrate at the Royal Army Medical College *the heads of all the specialist* branches of medicine and surgery. The revision of departments involved has been secured by transferring the Director of Pathology, the Consulting Physician to the Army, and the Consulting Surgeon to the Army, from the War Office to the Royal Army Medical College and absorbing the appointments of Professors of Pathology, Tropical Medicine, and Military Surgery respectively. Each of these officers will as at present have an assistant professor under him, and in the case of medicine and surgery these officers will form the visiting medical and surgical staff of the Queen Alexandra Military *Hospital, Millbank. The Director of Pathology will still* control the pathological work in commands as well as carry on his professorial work. The teaching staff of the College will now become the consultants and advisers of the Director-General, Army Medical Services, at the War Office, and will be available for consultation in Commands when required. The composition and location of the Directorate of Hygiene has not been changed. The consultant and professor in each case, though normally of colonel's rank, may be promoted to major-general should he come up for promotion in the ordinary course while holding the appointment. The appointment of Commandant and Director of Studies at the College will, in future, carry with it the rank of major-general, but on the other hand the Deputy-Director, Army Medical Services, at the War Office will, when the next appointment is made, be a colonel instead of a major-general. Thus, of the possible 11 major-general's appointments open to Royal Army Medical Corps Officers, five are now of a professional nature and six administrative.

This is a definite step forward in the professional work of the Corps, whose advance has been evident since the war. It should do much to remove the erroneous impression that adequate professional work is unobtainable in the Army. In consequence also of the elaboration of motor transport in recent years many of the smaller hospitals in commands have been closed and the patients concentrated in central hospitals fully equipped with all the special departments made necessary by modern methods of diagnosis and treatment. This has resulted in specialisation in all branches of medical, surgical, and pathological work being now the rule rather than the exception.

A civilian inspector of the teaching and civilian examiners will be appointed by the Director-General A.M.S., after consultation with the Presidents of the Royal College of Physicians of London and the Royal College of Surgeons of England, thus promoting uniformity in the educational courses of R.A.M.C. officer and the civilian doctor.

NEW APPOINTMENTS.

As a result of the revision Colonel John Weir West, C.M.G., and Colonel Ralph Bignell Ainsworth, D.S.O., both late R.A.M.C., are promoted Major-Generals as from June 15th.

Major-General West, Hon.-Surgeon to H.M. the King, and late A.D.M.S. for the Burma District, and Consulting Surgeon to the Army, resumes the latter status in becoming Professor of Military Surgery at the R.A.M. College.

Major-General Ainsworth, Hon. Physician to H.M. the King, *continues to occupy* his post as Commandant and Director of Studies at the College, the post having now become one to be held by a Major-General.

The *London Gazette* also announces :—

Colonel A. C. H. Gray, O.B.E., M.B., K.H.S., late R.A.M.C., from Director of Pathology, War Office, to be Director and Professor of Pathology, Royal Army Medical College.

Lieutenant-Colonel and Brevet Colonel (temporary Colonel) W. P. MacArthur, D.S.O., O.B.E., M.D., F.R.C.P.I., K.H.P., from Consulting Physician to the Army, to be Professor of Tropical Medicine, Royal Army Medical College, and Consulting Physician to the Army.

Major and Brevet Lieutenant-Colonel J. M. Weddell, F.R.C.S., Royal Army Medical Corps, from Professor of Military Surgery, to be Assistant Professor of Military Surgery, Royal Army Medical College.

Major J. Heatley-Spencer, O.B.E., M.D., Royal Army Medical Corps, from Professor of Tropical Medicine, to be Assistant Professor of Tropical Medicine, Royal Army Medical College.

Lieutenant-Colonel H. M. J. Perry, O.B.E., Royal Army Medical Corps, from Professor of Pathology, to be Assistant Professor of Pathology, Royal Army Medical College.

ROYAL NAVAL MEDICAL SERVICE

THE following appointments have been notified: Surg. Comdrs. *F. C.* Wright to *Colombo*, and *E. St. G. S.* Goodwin to *Pembroke*, for Chatham Barracks. Surg. Lt.-Comdr. A. G. L. Brown to *Curacoa.*

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. R. Erskine-Gray to *Pembroke*, for Chatham Hospital.

Surg. Lt. E. R. G. Passe to *Victory*, for Haslar Hospital.

ROYAL ARMY MEDICAL CORPS

The undermentioned Lts. to be Capts.: R. R. Leaning and W. G. Harvey.

Lt. C. J. Dobbin relinquishes his temp. commn.

TERRITORIAL ARMY

Capt. L. F. E. Jeffcoat to be Maj.

INDIAN MEDICAL SERVICE

Lt. (on prob.) G. R. M. Apsey to be Capt. (prov.) (on prob.).

AUXILIARY AIR FORCE

Flying Officer H. W. Walter is promoted to the rank of Flight Lieutenant.

ORDER OF THE NILE

The King has given to Major Robert George Archibald, C.M.G., D.S.O., licence to wear the Insignia of the Second Class of the Order of the Nile, conferred upon him by the King of Egypt, in recognition of valuable service rendered while in the employment of the Sudan Government.

INTERNATIONAL CONGRESS FOR LIGHT.—The second International Congress for Light (biology, biophysics, and therapeutics) will be held at Copenhagen *from* August 14th to 18th, under the presidency of *Dr. Axle* Reyn. The principal subjects of discussion will be: the action of the general light baths in tuberculosis; climatological research in its relation to public health; instruction in actinology; the rôle of pigment in light biology; and the therapeutic effect of general light baths. A report will be presented by the international committee for the determination of a standard unit of measurement for ultra-violet radiation, and a morning will be devoted to demonstrations at the Finsen Institute. Speakers from England will include *Sir Henry Gauvain, Sir Leonard* Hill, and Dr. W. Kerr Russell. During and after the conference there will be opportunities of seeing the neighbourhood, and on August 19th and 20th it will be possible to visit Odense, the Julemærke Sanatorium and Vejlefjord Sanatorium, returning via Hamburg. Excursions to Sweden and Norway can be arranged.

OBITUARY

WILLIAM WILLIAMS KEEN, M.D.

EMERITUS PROFESSOR OF SURGERY, JEFFERSON COLLEGE, PHILADELPHIA

WE regret to announce the death on Tuesday, June 7th, of Prof. William Williams Keen, the American surgeon of international fame, in his 96th year. In him the medical profession loses a leader of surgical thought and accomplishment whose practical teaching of his subject ranged from 1866 to 1907, just over 40 years.

PROF. W. W. KEEN

William Williams Keen was born in Philadelphia in 1837, only 60 years after the American Declaration of Independence. He was indeed a link with history. In 1853 he completed his preliminary education at the Philadelphia High School and entered the Brown University with the original intention of becoming a clergyman, but the study of chemistry and physics decided him to enter for medicine. In 1861 the American Civil War broke out and although not yet qualified he served with the troops in a medical capacity while he contrived to continue his professional studies. These he completed in 1862 and re-entered the Army with his qualifications. On leaving the Army he came into close contact with Weir Mitchell, already a physiologist whose work was known in Europe, and he collaborated with him and Morehouse, his junior, in the publication of some interesting papers on neurological surgery, then quite a new subject. Two years of post-graduate work in Paris, Vienna, Berlin, and London followed, and in 1866 Keen returned as head of the Philadelphia School of Anatomy and began to teach anatomy and operative surgery and surgical pathology. He competed unsuccessfully for the chair of anatomy at the Jefferson College, but many years later was appointed to that of surgery, having in the interval held other teaching appointments and secured a very large surgical practice. At Jefferson College, until his retirement in 1907, he taught increasingly large classes of students and established a surgical clinic of the first importance, so much so that when, in 1907, having reached his seventieth year, he made an extended tour round the world, he found his former pupils in almost every country that he visited.

Prof. Keen was a prolific author alike on surgical and on religious and social subjects, and always his views were fearless and clear-cut and revealed him as a great controversialist, simple in expression, reasonable, and direct. He wrote an early history of practical anatomy, a history of the first Baptist Church of Philadelphia, and a work on the Surgical Complications of Typhoid Fever—these in sequence. He collaborated with Dr. William White in an admirable treatise on surgery generally, he edited Heath's Practical Anatomy, he published numerous collections of essays and addresses on such themes as animal experimentation, the treatment of war wounds, early professional developments in the United States, and artistic anatomy, and he contributed to and edited Keen's System of Surgery.

Necessarily such a veteran was the recipient of many honours, and Keen held honorary degrees as M.D., LL.D., Ph.D., or Sc.D., from (among others) the Universities of Harvard, Yale, Toronto, St. Andrews, and Upsala; he was an hon. F.R.C.S. of England, Edinburgh, and Ireland, and had been president of the American Surgical Association and of the College of Physicians in Philadelphia, while he presided over the International Congress of Surgery in Paris in 1920. His long and valuable life was essentially a happy one. He was devoted to his profession in every aspect, he rejoiced in his deeply held religious convictions, and he had a remarkable gift of making friends.

Lord Moynihan allows us to publish the following notes of his personal relation with William Williams Keen :—

" Dr. Keen's death, at the age of 95, will be deeply mourned by the multitude of his friends in all parts of the world. A man's age is not to be counted by the years he has lived, but, in many cases at least, by the freshness of his enthusiasms. Dr. Keen's eagerness in every form of intellectual pursuit never ceased to astonish his friends, sometimes even perhaps to embarrass them, for in pursuit of knowledge he spared no man ! In England Dr. Keen found many men who regarded him with warmest affection, and with admiration for his pioneer and long continued service to the cause of surgery. His reputation became international half a century ago ; 32 years ago he was made an Honorary Fellow of the Royal College of Surgeons of England, and in praise of Lister then made a speech which none who heard it will ever forget.

" As an author he was prolific. He wrote, with Dr. William White, a Text-book of Surgery, which was the first in our language to be based upon bacteriology ; it almost alienated our affections from 'Erichsen.' Many men considered him—though having heard Nicholas Senn and J. B. Murphy, I could never agree—the greatest teacher of clinical surgery America had ever known. His virility and force were well matched with sincerity and invulnerable accuracy, and tempered with sobriety ; authentic qualities expressing his own character and habits of thought. He was the protagonist of those ideas to which most members of our profession adhere in relation to vaccination, vivisection, laboratory research. The public in America regarded him as the incorruptible champion of medicine. With him controversy was never coarsening. He was a man of decided views emphatically expressed ; but he was, no less, the very flower of culture, the very perfume of courtesy. He bore himself on all occasions with a genial simplicity, and showed a fine sense of respect for opposing views which disarmed criticism and often encouraged agreement.

" He had the happiest knack, excelled not even by Osler, of keeping in touch with his friends in all lands. I have a number of his letters, many written after he was 90 in most beautiful script, and with the steadiest of hands. Since he first stayed with me 25 years ago almost every letter of his bore a reference to some incident that had then occurred, to some member of my family, or to some plan maturing for our next meeting. It was justly said of Osler that many men in many lands hugged the belief that they were his particular cronies. That was certainly true in regard to Keen.

"Keen was one of the very first surgeons in the world to realise the truth and high importance of Lister's teaching. His great predecessors, Gross and Agnew, had laboured under the tyrannies of almost inevitable, raging infections. Keen helped to inaugurate the new era. His work on the brain, nervous system, abdominal organs, upon the ravages of typhoid fever in their surgical relations, indeed upon all branches of surgery—and he practised all with immense success—was perhaps the most considerable and the most inspiring of that of any surgeon in the States. The simplicity and flawless integrity of his life, his exquisite sense of humour, his power of provoking it, and his capacity for swift and often unanswerable reply, all helped to create a personality that no man who knew him will ever be able to forget. He once told me that the secret of life was to mix merry laughter with earnest labour. He, most assuredly, proved that to be true. If wisdom is a right conception of the ends of life, my very dear old friend Dr. Keen was indeed among the wisest of men."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Patents and Designs Bill

In the House of Commons on Tuesday, June 7th, Mr. Hore-Belisha (Parliamentary Secretary to the Board of Trade) moved the second reading of the Patents and Designs Bill which, he said, was to give effect to the recommendations of the Departmental Committee.

Sir F. E. Fremantle said he wished to raise the question of the patenting of food and drugs, and to call attention to a point of great and growing importance which was omitted from the Bill designedly because of the difficulty of the subject. He would like to ask for some explanation of the attitude of the Ministry in regard to this most important point. He did not think it was sufficiently known that the patenting of a large number of the most important medical drugs and medicines recently discovered was subject to a patent law which had unfortunately put our research at the mercy of certain foreign countries.

VITAMINS

The position was quite extraordinary. He thought most people would know the vital difference to the foods of the country between fresh butter and margarine. Margarine was coming more and more into use naturally enough, and yet it had been discovered of recent years that what it really lacked was a certain substance called vitamin D. The discovery of vitamin D was made only a few years ago, and it was due to research in this country when it was discovered how by the use of ultra-violet rays it could be produced out of a certain material called ergosterol. Unfortunately the patent for the manufacture of this vital material was taken out by a worker in an American university, and it was known as the Steenbock patent. It gave patent rights over not only America, but all other countries, including this country, for all forms of manufacture of vitamin D. Prof. Steenbock gave the patent rights over to the universities, and the universities submitted it to a committee and it was run by the committee for the benefit of that university. The patent rights were made out with definite conditions in this country which were found to be very hampering to research. It was considered that the patent ought not to cover the more modern processes which had not been discovered there but here, and would, as was the custom in this country, be given to the research workers for their free use. The university had built up very large sums and was a wealthy corporation, and no one cared to challenge their rights. They were extracting large royalties from all who used this process of treatment of our food, and they were also hampering our research work. A large amount of the very best work was done in these subjects by the big manufacturing houses, but they found it more worth while to pay the royalty rather than fight a corporation of that sort. They paid the royalties themselves and passed it on to the consumer, so that our consumers suffered because our patent rights were not sufficient to protect us against the patent rights taken out in America.

BIOLOGICAL PRODUCTS

In the same kind of way we were at the mercy of a foreign patent with regard, for instance, to the subject of insulin. When insulin was discovered in Canada the patent right was given over to a Canadian university, which most nobly gave it to our Government and our Government passed it on to the Medical Research Council, and they were able to use the patent rights in insulin and to prevent any commercialisation of it which would have been fatal to a large number of our people, and they had seen that it was properly used and produced. There was a third product, the discovery by Dr. and Mrs. Dick working together in Chicago. They discovered the toxin and the antitoxin for scarlet fever. They took out patent rights and gave them to the University of Chicago. They were used commercially and mercilessly by the committee running the trust, and the result had been to hinder and to stop very largely research in this country.

OPEN DOOR FOR RESEARCH

These matters were put before the Board of Trade by the Medical Research Council three years ago, with a view to giving evidence before the Departmental Committee upon whose report this Bill was founded, yet no action had been taken officially to incorporate their representations in this measure. He maintained that that was a most serious blot, although there might be good reasons for their omission. Perhaps it might be one of expediency. It was a very difficult subject, and he felt that the matter required considerable explanation. If the Board of Trade were able to give good reasons for not including this most important principle in this measure he hoped that they would be able to give some kind of undertaking that they were seriously considering this matter, which went right to the root of the health of the people of the country. It was a matter which required investigation, even if it could not be brought in as an amendment to the Bill. A conference was held by the British Medical Association which was also attended by the President of the College of Physicians and Surgeons and members of the Medical Research Council, during which the matter was gone into, and they came to the conclusion that they would first of all see the Board of Trade and having seen them they were asked to consider whether it was not advisable to move an amendment to the measure. They had been asked not to move any amendment at the present time. They could only implement that undertaking if they were given some pledge from the Board of Trade that they recognised the seriousness of the position. The matter required a good deal of international work, and required a good deal of thought as to what they could do in this country. The medical profession definitely maintained that the results of research should be open to everybody and above board, and should be applied to universal use, and that there should be no patent rights whatever as regards what were called animal medicines and products, vitamins, sera, antitoxins, and the rest of them. No patents should be allowed whatever which were a disadvantage to other countries. As regarded synthetic compounds made by chemical drug houses and so on, it would be impossible that patents should be given for those purposes, but as a common practice and a right one in this and other countries medical men should not be allowed to take out patents to make a profit by them. It would be compulsory, as the conference suggested, that patents for such articles for medical use should be dedicated to universities or some public trust or body for general use. They required legislation to deal with all these matters. No doubt the League of Nations and their work and international matters come in, but it took a long time to get anything through the League of Nations, as they knew full well, or internationally. In the meantime they ought to act. There were signs that they were not acting and that the Department did not understand these things, and that the Government were paying no attention whatever to them. He hoped that they would receive some explanation from the Board of Trade that they realised the seriousness of the situation and that they would do something to consider the matter in due course.

THE QUESTION OF EXPROPRIATION

Sir Stafford Cripps said that there was one way in which the difficulty referred to by Sir F. E. Fremantle could be overcome, and that was by giving the Government power to expropriate patents. At present the Government had that power in respect of inventions for warlike purposes. He (Sir S. Cripps) did not see any reason why a useful article, such as some medical or food product, should not also be subject to acquisition by the Government in the same way. There was no reason why an invention should not be capable of being put into safe custody to be used under the disposition of the Medical Research Council or other such body for the benefit of the whole country.

Sir Boyd Merriman (Solicitor-General), after giving an assurance that any representations with regard to amendments to the Bill would be carefully considered by the Government in Committee, said that there was already power to compel people to make anything which was the subject of a patent available for public service. That involved payment of royalties to the inventor, and he thought that there was no more reason why a person who had spent his life in research and invention in connexion with health should be deprived of the fruits of his labours than any other inventor. The Government were not prepared as at present advised to consider any question of expropriation without compensation of any form of invention. (Cheers.)

Sir Stafford Cripps said that he admitted that compensation should be paid on the same terms as in regard to munitions.

Sir Boyd Merriman said that Sir F. E. Fremantle had said that anything which affected health or medical research should be made open to the public and not be subject to a patent at all. This Bill was professedly a modest Bill. It was designed to give effect to the recommendations of the Departmental Committee.

EXPLOITATION REPUGNANT TO THE MEDICAL PROFESSION

Dr. O'Donovan said that there was a great difference in the outlook on life between the legal and the medical profession, and it was because of that that Sir Boyd Merriman had not followed wholeheartedly the lead given him by Sir F. Fremantle. The medical profession had always resented any suggestion coming from the Government that the profession had the right to exploit the people. There was no question that patents could be used for exploitation, and the idea that the sons of Hippocrates should be unfaithful to an oath which had held for over 2000 years had been made for the first time that evening. To him the suggestion was repulsive. It was true that chemists were entitled to the result of their studies in organic chemistry, but that the results of medical research should be followed by action, and that again protected by patent, was a conception which was new to the ideals of medicine. He was grieved to hear it from the front bench, and he hoped that the point which had been put so boldly by Sir F. E. Fremantle would be borne in mind by the Government in the future discussions on the Bill.

The Bill was read a second time.

The Children Bill

In the House of Lords on June 13th the Children and Young Persons Bill was further considered in Committee. The Earl of Onslow (Chairman of Committees) was in the chair. Clause 48 provides that no child under 12 years shall be employed. Lord Banbury carried an amendment to omit the provision that by-laws made by local authorities might authorise the employment of children under 12 by their parents or guardians. Viscount Astor moved a new clause providing that a local authority might make by-laws with respect to the employment of persons under 18 years, but not being children. The clause continued :—

> (2) By-laws so made may distinguish between persons of different ages and sexes, and different localities, trade, occupations, and circumstances, and may contain provisions for prescribing: (i) The number of hours in each day or in each week for which and the times of day at which they may be employed; (ii) the intervals to be allowed to them for meals and rest; (iii) the holidays or half-holidays to be allowed to them; (iv) any other conditions to be observed in relation to their employment.
>
> (3) Nothing in this section shall empower a local authority to make by-laws with respect to: (*a*) employment in or about the delivery, collection, or transport of goods except in the capacity of van boy, errand boy, or messenger; (*b*) employment in or in connexion with factories, workshops, mines, quarries, shops, or offices, not being employed in any capacity as aforesaid; (*c*) employment in the building or engineering trades, not being employment in any such capacity as aforesaid; (*d*) employment in agriculture; (*e*) employment in domestic service except as non-resident daily servant; provided that this section shall not come into operation until a resolution has been passed by both Houses of Parliament.

The clause was agreed to. On Clause 55, which makes provisions in regard to juveniles taking part in or being trained for dangerous performances, Lord Balfour of Burleigh moved an amendment to *delete the proviso that no girl under 18 should take* part in any public performance in which her life or limbs were endangered. He said that in families of acrobats training began at a very early age. The amendment was accepted.

National Health Insurance Bill

In the House of Commons on June 13th the National Health Insurance and Contributory Pensions Bill was considered in committee. On Clause 1 Mr. Logan moved to leave out Subsection 1, which provides that a person who becomes employed while treated by any of the provisions of the section as insured shall not on ceasing to be so employed become entitled for that reason to extension of insurance unless during the contribution half-year in which he ceased to be employed and the preceding half-year he was employed during eight contribution weeks. He said that under this Bill the burden was to be borne by the unemployed members of the approved societies. He did not know what would happen in the near future if they denied these people medical benefits. Sir E. Hilton Young said that there was no question of forfeiture of rights under this Bill. It was recognised that there would be hardship in the abrupt termination of insurance rights, and that some extension of insurance rights should be given, even beyond what was strictly legitimate on the actuarial and financial basis of the insurance scheme. The extension that was actually given was an extension of 21 months of free insurance with full benefit, and then an extended year with reduced benefits. That was a very generous extension to save the insurance of the unemployed. Under the Bill a further extension had been made, and anyone who got back to work could immediately start the whole period of extension over again. There must be a practical test of employment, and the test was to be that the insured person must show eight stamps during a year instead of the present farcical test of one stamp.

The Duty on Beer

When the Finance Bill, as amended, was being considered by the House of Commons on report, Sir W. **Wayland** moved a new clause to restore the duty on beer to the level at which it stood before the Budget of September, 1931.

DRINK A CAUSE OF SECONDARY POVERTY

Dr. **Salter** said that in opposing this new clause he spoke for himself and not for his party. The Labour party by a unanimous vote had agreed that its members should have a perfectly free hand in this discussion. At the present time there was less beer being drunk per head in this country than at any previous time in our history. Was that a national calamity? On the contrary, he said that, particularly at the present juncture, it was a national advantage. On this point the Royal Commission on Licensing, which was not composed of teetotallers, but was a very mixed body with a large majority of non-teetotallers in its composition, after 18 months consideration of the subject had expressed itself in no uncertain terms. They said in their report that "a general reduction in consumption of intoxicants ought to be aimed at," and further, that "excessive drinking still persisted in very large measure and that apart from actual intemperance expenditure on intoxicants still reached a figure which was definitely uneconomic."

He had practised as a medical man for over 30 years in one of the poorest boroughs of London and one of the poorest quarters in the whole country. During that time he had been the recipient of very intimate and very sacred confidences. He had been into many thousands of homes and had been able to watch family life from the inside, and he said without hesitation that not in the far distant past but at the present time there were enormous numbers of families whose babies were going short of milk, where children were going without boots, where the whole family happiness was being wrecked, because the father was an excessive beer consumer. Although he agreed that primary poverty was not due to drink yet a very large proportion of secondary poverty was due to drink. It was a distinct national advantage that money should be spent on household necessities rather than on alcoholic drinks.

THE CHANCELLOR'S APPEAL

Mr. **Chamberlain** (Chancellor of the Exchequer) said that while he had budgetted for an increase of revenue amounting to £8,000,000 from this tax he nevertheless expected that if the tax were remitted he would lose not £8,000,000 but £10,000,000. Could he afford to give away £10,000,000 in the present year? All of them, no doubt, could see reasons for hope and confidence in the future. At the same time he did not think that they could feel so satisfied that the worst was over that they could afford to sacrifice any reserves that they might have behind them. He respected the sincerity of feeling of those members who supported this clause, but he appealed to hon. Members who had been returned to support the National Government and had done so because they felt that a National Government would represent this country overseas with a prestige and authority which could not attach to any purely party Government. There was no question of the Government being defeated on this clause; they were not afraid about that, but would hon. Members, even those who felt strongly on this matter, bear in mind that a really substantial vote against the Government on a matter of such importance as this on an essential part of the Budget could not do otherwise than injure and diminish its authority. He asked hon. Members not to forget these great national and international world interests which were about to be discussed, and the future of which might perhaps be decided in the course of the next few weeks, and not take a step at this moment which might do anything to make less the influence and the power that the Government exercised.

POINT OF VIEW OF REVENUE

Mr. **Churchill** said that he admitted the force of much of that which was said by Dr. Salter on the temperance aspect, but when they considered the progress which had been made, perhaps, he admitted, under the influence of high taxation in the past, in the sobriety of this country, no one could consider that the temperance aspect was an urgent aspect in the discussion at the present time. In 1913 there were 183,000 convictions for drunkenness, and in 1931, the last year for which they had complete figures, they had fallen to 53,000. It was perfectly clear that the temperance aspect ought not to sway their opinions about this tax at the present time and that they were entitled to look at it solely from the point of view of revenue.

WHITE BREAD WORSE THAN BEER?

Mr. **Macquisten** said that Dr. Salter and his friends who thought like him had a sour outlook on life, and they thought that beer was bad for the health. A lot of things were damaging to health. He believed that in addition to his duties as a medical man Dr. Salter was a baker. If that was so, he might tell the hon. Member that if he lived in poor benighted Portugal, or in one or two other European countries and sold the white bread which he sold to the masses of the people in Bermondsey he would be sent to gaol for a long period for selling a substance dangerous to human health. (Laughter.) The devitalised stuff which bakers sold, with all the real good taken out of it, and lacking all the things which went to body-building and teeth making, and so on, was thoroughly bad, and the hon. Member and his friends had done more harm than all the brewers in the district round London. (Laughter.) Hon. Members had no idea of the amount of the illicit production of alcoholic liquor which was going on in this country. A favourite stuff was what was called "surgical spirits," which he was informed contained a little castor oil and a very small proportion of boracic acid and could be bought without any prescription in any chemist's shop. Then there was the spirit used by french polishers which contained only a small quantity of wood spirit and appeared to be consumed with comparative safety by many people. There was also the ordinary mineralised methylated spirit which he was told was only consumed by the most abandoned persons, and was sold in some districts in small quantities at 2*d*. or 3*d*. a time. A Government which taxed alcoholic liquors so heavily was asking for such things. Such taxation was the worst and most injurious class legislation.

THE WISHES OF THE POOR

Dr. **O'Donovan** said that a member of his own profession, like one of the sect of the Manichees, had explained to the House the evil of drink and had advised them to take to that drink which was exclusively designed by nature for the nourishment of calves. (Laughter.) He (Dr. O'Donovan) intervened in the debate only to express to the House and to the Government the wishes of the poor in his constituency. He had received, and perhaps other hon. Members had had the same experience, a petition self-organised by the poor of his constituency and signed by 6000 people asking him to do something to persuade the Chancellor of the Exchequer to lower the tax on beer. He repudiated entirely the suggestion that the poor in the mass were horrid and made up of potential drunkards The poor to-day could not afford a glass of beer. When he was a medical student there was a rhyme "A little of what you fancy does you good." When one was promoted to a higher sphere one understood that a little alcohol was an anodyne for the discomforts of this weary world. When one was even further promoted to live among the highbrows one understood that a little alcohol removed those inhibitions which kept one in a state of chronic melancholia. (Laughter.) In English inns the greatest influences of human kindness had been cogitated by decent men for the good of their fellows. (Cheers.) He would remind the House that the London Hospital, one of the greatest in this country, was founded by a meeting of simple workpeople, business men, and merchants, in a London tavern. (Cheers.) Those who supported this new clause were animated by no spirit of animosity to the Government. They sympathised with the burden that the Chancellor of the Exchequer carried, and if they voted against him they did it for one reason—that that sore feeling of the poor should not lack registration and that this matter might be kept open for consideration at another time.

The clause was negatived.

Taxation of Research Stipends

Sir J. WITHERS moved a new clause to provide that stipends paid to research students at universities should be treated for purposes of taxation as earned income, and not as unearned income as decided recently by the Inland Revenue authorities.

Major ELLIOT said that he was glad to be able to give the assurance that where a student was getting a stipend on the terms that he devoted time research on a special subject he would be assessed under Schedule E and be eligible for earned income allowance.

The new clause was, by leave, withdrawn.

HOUSE OF COMMONS

THURSDAY, JUNE 9TH

Mentally Defective Children

Wing-Commander JAMES asked the President of the Board of Education the number of mentally defective children for whom special educational facilities had been provided in the last pre-war year and during the last three years; and the additional cost involved in the current year.—Sir D. MACLEAN replied: The average number on the registers of special schools for mental defective children were as follows: Year ended March 31st, 1914, 13,563; 1929, 15,479; 1930, 15,308; 1931, 15,269; and 1932 figures not yet available.

In regard to the last part of the question, I regret that information is not available as to the expenditure incurred on these schools as distinct from special schools for defective children of other types.

Married Women and Health Insurance

Miss RATHBONE asked the Minister of Health what would be the estimated saving to the funds of approved societies under the National Health Insurance Acts if all women on marriage were put into Class K, subject to the proviso that any woman who could prove 26 weeks of employment and of contribution subsequent to the date of her marriage and within two years of that date should be entitled to be restored to the full benefits provided by the Act, either as at present provided or, alternatively, as proposed to be applicable to married women under the Bill now under consideration.—Sir E. HILTON YOUNG replied: There are no data available for the formation of any reliable estimate of the financial effect of the change referred to by the hon. Member.

MONDAY, JUNE 13TH

The Purification of Mussels

Mr. REMER asked the Minister of Agriculture if he could make any statement as to the progress made by the experimental station at Conway for the purification of mussels; what steps he was taking, in conjunction with the Minister of Health, to make the advantages to public health more widely known; and to secure an extension of these purification tanks.—Sir JOHN GILMOUR replied: Mussels have been cleaned successfully on a commercial scale at Conway for about 15 years. The Ministry takes every opportunity of bringing the advantages of purification to the notice of those interested in shell-fish beds which have been closed owing to pollution, and acts in close consultation with the Ministry of Health in these matters. My hon. friend will be aware that a Bill introduced by my hon. friend the Member for Ormskirk to enable local authorities to provide or contribute towards the provision of means for cleansing shell-fish has recently been approved by Parliament.

Milk Reorganisation Committee

Brigadier-General CLIFTON BROWN asked the Minister of Agriculture whether he would request the reorganisation committee for milk now sitting to issue before September some announcement indicating the lines on which their proposals would be evolved, so as to help and be a guide to those engaged in fixing milk prices next autumn.—Sir JOHN GILMOUR replied: The fact that the problems confronting the milk industry are being actively investigated by the Milk Reorganisation Commission should in itself conduce towards friendly and helpful negotiation on milk prices next autumn, but while it is within the Commission's discretion to make interim representations to me if they think fit, I do not feel that it is desirable that I should give them instructions in the matter.

Cerebro-spinal Fever

Mr. GROVES asked the First Lord of the Admiralty how many cases of cerebro-spinal meningitis or other form of cerebro-spinal disease had been reported in the Navy since Jan. 1st last; how many of them had been fatal; and how many of them had been subjected to vaccination, revaccination, or inoculation during the six months prior to the attack.—Lord STANLEY replied: Ten cases of cerebro-spinal meningitis have been reported since Jan. 1st last, and four of them have proved fatal. According to available records, three of the total number had been subjected to vaccination, none to revaccination, and one to inoculation within six months of the attack. The information concerning vaccination, &c., is not obtainable in two of the cases. All were cases of epidemic cerebro-spinal meningitis ("spotted fever"), and none of them was of the post-vaccinal type.

TUESDAY, JUNE 14TH.

First-aid Equipment on Motor Vehicles

Mr. GUY asked the Minister of Transport which officials were responsible for examination of first-aid equipment when a public service vehicle was presented for licensing under the Road Traffic Act.—Mr. WOMERSLEY (Lord of the Treasury) replied: No statutory responsibility rests upon any particular official for the examination of first-aid equipment. In fact, however, it is inspected by the Public Service Vehicle Examiners when vehicles are presented for examination prior to licensing.

Imported Liquid Eggs

Mr. ANSTRUTHER-GRAY asked the Minister of Health what steps were taken by his department to ensure that liquid eggs imported into this country were certified fit for human consumption before being sold for that purpose.—Mr. ERNEST BROWN replied: Liquid eggs are subject to examination on importation into this country, and if they are found to be unfit for human consumption they may be seized and destroyed.

ASSOCIATION OF PORT SANITARY AUTHORITIES DINNER.—This Association met in London this year, and on June 9th the Corporation of the City of London entertained to dinner some 100 of its members and friends at the Guildhall. The Burgomaster of Antwerp was among the guests. The Lord Mayor and other speakers emphasised the important work done by members of the Association in protecting the country from the insidious introduction of infection, as well as in caring for the conditions of life of men on ships. The labours of Dr. Collingridge and Dr. Herbert Williams for the Port of London in the past, and the present activities of Dr. W. M. Willoughby and Dr. C. F. White were singled out for special praise. The President for the year, Mr. Cyril Gamon, referred to the loss the Association had recently sustained in the death of Dr. W. R. Dearden, of Manchester, and gave some account of the work of the Association since its formation in 1898. The prevention of the importation of infectious disease had been one of its most important duties. The methods by which this object was achieved included the circulation of information regarding the prevalence of cholera, yellow fever, plague, and small-pox in ports abroad, the devising of the procedure to be adopted when infected ships arrived in English ports, and rat repression. The Association had made representations from time to time to the Government of the day on such matters as food inspection, the medical inspection of aliens, the hygiene of crew spaces, and many of the recommendations made had been put into force. Matters dealt with during the last year had included the prevention of the importation of sterilised meat, the question of ownership of unsound food, the scale of charges for certificates of deratisation and exemption from deratisation granted under the International Sanitary Convention, the transport of live fish for human food, smoke abatement, and the discharge of sewage from ships into docks and enclosed harbours.

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He had practised as a medical man for over 30 years in one of the poorest boroughs of London and one of the poorest quarters in the whole country. During that time he had been the recipient of very intimate and very sacred confidences. He had been into many thousands of homes and had been able to watch family life from the inside, and he said without hesitation that not in the far distant past but at the present time there were enormous numbers of families whose babies were going short of milk, where children were going without boots, where the whole family happiness was being wrecked, because the father was an excessive beer consumer. Although he agreed that primary poverty was not due to drink yet a very large proportion of secondary poverty was due to drink. It was a distinct national advantage that money should be spent on household necessities rather than on alcoholic drinks.

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Mr. **Chamberlain** (Chancellor of the Exchequer) said that while he had budgetted for an increase of revenue amounting to £8,000,000 from this tax he nevertheless expected that if the tax were remitted he would lose not £8,000,000 but £10,000,000. Could he afford to give away £10,000,000 in the present year? All of them, no doubt, could see reasons for hope and confidence in the future. At the same time he did not think that they could feel so satisfied that the worst was over that they could afford to sacrifice any reserves that they might have behind them. He respected the sincerity of feeling of those members who supported this clause, but he appealed to hon. Members who had been returned to support the National Government and had done so because they felt that a National Government would represent this country overseas with a prestige and authority which could not attach to any purely party Government. There was no question of the Government being defeated on this clause; they were not afraid about that, but would hon. Members, even those who felt strongly on this matter, bear in mind that a really substantial vote against the Government on a matter of such importance as this on an essential part of the Budget could not do otherwise than injure and diminish its authority. He asked hon. Members not to forget these great national and international world interests which were about to be discussed, and the future of which might perhaps be decided in the course of the next few weeks, and not take a step at this moment which might do anything to make less the influence and the power that the Government exercised.

POINT OF VIEW OF REVENUE

Mr. **Churchill** said that he admitted the force of much of that which was said by Dr. Salter on the temperance aspect, but when they considered the progress which had been made, perhaps, he admitted, under the influence of high taxation in the past, in the sobriety of this country, no one could consider that the temperance aspect was an urgent aspect in the discussion at the present time. In 1913 there were 183,000 convictions for drunkenness, and in 1931, the last year for which they had complete figures, they had fallen to 53,000. It was perfectly clear that the temperance aspect ought not to sway their opinions about this tax at the present time and that they were entitled to look at it solely from the point of view of revenue.

WHITE BREAD WORSE THAN BEER?

Mr. **Macquisten** said that Dr. Salter and his friends who thought like him had a sour outlook on life, and they thought that beer was bad for the health. A lot of things were damaging to health. He believed that in addition to his duties as a medical man Dr. Salter was a baker. If that was so, he might tell the hon. Member that if he lived in poor benighted Portugal, or in one or two other European countries and sold the white bread which he sold to the masses of the people in Bermondsey he would be sent to gaol for a long period for selling a substance dangerous to human health. (Laughter.) The devitalised stuff which bakers sold, with all the real good taken out of it, and lacking all the things which went to body-building and teeth making, and so on, was thoroughly bad, and the hon. Member and his friends had done more harm than all the brewers in the district round London. (Laughter.) Hon. Members had no idea of the amount of the illicit production of alcoholic liquor which was going on in this country. A favourite stuff was what was called "surgical spirits," which he was informed contained a little castor oil and a very small proportion of boracic acid and could be bought without any prescription in any chemist's shop. Then there was the spirit used by french polishers which contained only a small quantity of wood spirit and appeared to be consumed with comparative safety by many people. There was also the ordinary mineralised methylated spirit which he was told was only consumed by the most abandoned persons, and was sold in some districts in small quantities at 2*d*. or 3*d*. a time. A Government which taxed alcoholic liquors so heavily was asking for such things. Such taxation was the worst and most injurious class legislation.

THE WISHES OF THE POOR

Dr. **O'Donovan** said that a member of his own profession, like one of the sect of the Manichees, had explained to the House the evil of drink and had advised them to take to that drink which was exclusively designed by nature for the nourishment of calves. (Laughter.) He (Dr. O'Donovan) intervened in the debate only to express to the House and to the Government the wishes of the poor in his constituency. He had received, and perhaps other hon. Members had had the same experience, a petition self-organised by the poor of his constituency and signed by 6000 people asking him to do something to persuade the Chancellor of the Exchequer to lower the tax on beer. He repudiated entirely the suggestion that the poor in the mass were horrid and made up of potential drunkards The poor to-day could not afford a glass of beer. When he was a medical student there was a rhyme "A little of what you fancy does you good." When one was promoted to a higher sphere one understood that a little alcohol was an anodyne for the discomforts of this weary world. When one was even further promoted to live among the highbrows one understood that a little alcohol removed those inhibitions which kept one in a state of chronic melancholia. (Laughter.) In English inns the greatest influences of human kindness had been cogitated by decent men for the good of their fellows. (Cheers.) He would remind the House that the London Hospital, one of the greatest in this country, was founded by a meeting of simple workpeople, business men, and merchants, in a London tavern. (Cheers.) Those who supported this new clause were animated by no spirit of animosity to the Government. They sympathised with the burden that the Chancellor of the Exchequer carried, and if they voted against him they did it for one reason—that that sore feeling of the poor should not lack registration and that this matter might be kept open for consideration at another time.

The clause was negatived.

Taxation of Research Stipends

Sir J. Withers moved a new clause to provide that stipends paid to research students at universities should be treated for purposes of taxation as earned income, and not as unearned income as decided recently by the Inland Revenue authorities.

Major Elliot said that he was glad to be able to give the assurance that where a student was getting a stipend on the terms that he devoted time research on a special subject he would be assessed under Schedule E and be eligible for earned income allowance.

The new clause was, by leave, withdrawn.

HOUSE OF COMMONS

THURSDAY, JUNE 9TH

Mentally Defective Children

Wing-Commander James asked the President of the Board of Education the number of mentally defective children for whom special educational facilities had been provided in the last pre-war year and during the last three years; and the additional cost involved in the current year.—Sir D. Maclean replied: The average number on the registers of special schools for mental defective children were as follows: Year ended March 31st, 1914, 13,563; 1929, 15,479; 1930, 15,308; 1931, 15,269; and 1932 figures not yet available.

In regard to the last part of the question, I regret that information is not available as to the expenditure incurred on these schools as distinct from special schools for defective children of other types.

Married Women and Health Insurance

Miss Rathbone asked the Minister of Health what would be the estimated saving to the funds of approved societies under the National Health Insurance Acts if all women on marriage were put into Class K, subject to the proviso that any woman who could prove 26 weeks of employment and of contribution subsequent to the date of her marriage and within two years of that date should be entitled to be restored to the full benefits provided by the Act, either as at present provided or, alternatively, as proposed to be applicable to married women under the Bill now under consideration.—Sir E. Hilton Young replied: There are no data available for the formation of any reliable estimate of the financial effect of the change referred to by the hon. Member.

MONDAY, JUNE 13TH

The Purification of Mussels

Mr. Remer asked the Minister of Agriculture if he could make any statement as to the progress made by the experimental station at Conway for the purification of mussels; what steps he was taking, in conjunction with the Minister of Health, to make the advantages to public health more widely known; and to secure an extension of these purification tanks.—Sir John Gilmour replied: Mussels have been cleaned successfully on a commercial scale at Conway for about 15 years. The Ministry takes every opportunity of bringing the advantages of purification to the notice of those interested in shell-fish beds which have been closed owing to pollution, and acts in close consultation with the Ministry of Health in these matters. My hon. friend will be aware that a Bill introduced by my hon. friend the Member for Ormskirk to enable local authorities to provide or contribute towards the provision of means for cleansing shell-fish has recently been approved by Parliament.

Milk Reorganisation Committee

Brigadier-General Clifton Brown asked the Minister of Agriculture whether he would request the reorganisation committee for milk now sitting to issue before September some announcement indicating the lines on which their proposals would be evolved, so as to help and be a guide to those engaged in fixing milk prices next autumn.—Sir John Gilmour replied: The fact that the problems confronting the milk industry are being actively investigated by the Milk Reorganisation Commission should in itself conduce towards friendly and helpful negotiation on milk prices next autumn, but while it is within the Commission's discretion to make interim representations to me if they think fit, I do not feel that it is desirable that I should give them instructions in the matter.

Cerebro-spinal Fever

Mr. Groves asked the First Lord of the Admiralty how many cases of cerebro-spinal meningitis or other form of cerebro-spinal disease had been reported in the Navy since Jan. 1st last; how many of them had been fatal; and how many of them had been subjected to vaccination, revaccination, or inoculation during the six months prior to the attack.—Lord Stanley replied: Ten cases of cerebrospinal meningitis have been reported since Jan. 1st last, and four of them have proved fatal. According to available records, three of the total number had been subjected to vaccination, none to revaccination, and one to inoculation within six months of the attack. The information concerning vaccination, &c., is not obtainable in two of the cases. All were cases of epidemic cerebro-spinal meningitis ("spotted fever"), and none of them was of the post-vaccinal type.

TUESDAY, JUNE 14TH.

First-aid Equipment on Motor Vehicles

Mr. Guy asked the Minister of Transport which officials were responsible for examination of first-aid equipment when a public service vehicle was presented for licensing under the Road Traffic Act.—Mr. Womersley (Lord of the Treasury) replied: No statutory responsibility rests upon any particular official for the examination of first-aid equipment. In fact, however, it is inspected by the Public Service Vehicle Examiners when vehicles are presented for examination prior to licensing.

Imported Liquid Eggs

Mr. Anstruther-Gray asked the Minister of Health what steps were taken by his department to ensure that liquid eggs imported into this country were certified fit for human consumption before being sold for that purpose.—Mr. Ernest Brown replied: Liquid eggs are subject to examination on importation into this country, and if they are found to be unfit for human consumption they may be seized and destroyed.

Association of Port Sanitary Authorities Dinner.—This Association met in London this year, and on June 9th the Corporation of the City of London entertained to dinner some 100 of its members and friends at the Guildhall. The Burgomaster of Antwerp was among the guests. The Lord Mayor and other speakers emphasised the important work done by members of the Association in protecting the country from the insidious introduction of infection, as well as in caring for the conditions of life of men on ships. The labours of Dr. Collingridge and Dr. Herbert Williams for the Port of London in the past, and the present activities of Dr. W. M. Willoughby and Dr. C. F. White were singled out for special praise. The President for the year, Mr. Cyril Gamon, referred to the loss the Association had recently sustained in the death of Dr. W. R. Dearden, of Manchester, and gave some account of the work of the Association since its formation in 1898. The prevention of the importation of infectious disease had been one of its most important duties. The methods by which this object was achieved included the circulation of information regarding the prevalence of cholera, yellow fever, plague, and small-pox in ports abroad, the devising of the procedure to be adopted when infected ships arrived in English ports, and rat repression. The Association had made representations from time to time to the Government of the day on such matters as food inspection, the medical inspection of aliens, the hygiene of crew spaces, and many of the recommendations made had been put into force. Matters dealt with during the last year had included the prevention of the importation of sterilised meat, the question of ownership of unsound food, the scale of charges for certificates of deratisation and exemption from deratisation granted under the International Sanitary Convention, the transport of live fish for human food, smoke abatement, and the discharge of sewage from ships into docks and enclosed harbours.

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[illegible] *and Obstetrics.*—Mr. J. D. Barris.

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European Committee for Mental Hygiene

Following on the first International Mental Hygiene Conference, held at Washington in May, 1930, Mr. Clifford Beers, the founder and secretary-general, met some 50 European representatives at the Union Interalliée in Paris on May 29th to initiate preparations for a second congress to be held in Paris in 1935, and to assist in constituting the European Committee for Mental Hygiene. The delegates from England were Mr. L. G. Brock (chairman of the Board of Control), Sir Hubert Bond (senior commissioner). Dr. R. D. Gillespie and Dr. Doris Odlum (joint hon. secretaries of the British Council for Mental Hygiene), and Dr. J. R. Rees (hon. deputy director of the Institute for Mental Psychology, *Tavistock-square*). The business meetings were followed by scientific sessions held at the psychopathic hospital Henri Rousselle at the invitation of Prof. Toulouse. The subjects included discussions (1) on a report by Prof. Rüdin (Berlin) on the place of eugenics in preventive mental hygiene; (2) on the *facilities* available in Europe for the treatment of mental disorder without legal formalities; (3) on international unification of statistics in relation to mental disease. A second European reunion is to be held in Rome in September, 1933, by invitation of the Italian representatives. Sir Hubert Bond was appointed British representative on the European executive and Dr. Gillespie the British corresponding *member of the European council.* Prof. Toulouse was elected president of the 1935 congress with Dr. Genil Perrin as hon. secretary.

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The Secretary of State for Scotland has reconstituted the Central Liaison Committee for Voluntary Hospitals in Scotland for the period to March 31st, 1935. The purpose of the Committee is to "act in liaison between the Department of Health for Scotland and the regional committees of voluntary hospitals in Scotland, to assist in keeping the Department in touch with voluntary hospital opinion, and, in the development of hospital services in Scotland, to foster coöperation between the voluntary hospitals and the local authorities in each region." The members are Lord Mackenzie (chairman); Sir David Wallace, F.R.C.S.; Mr. C. F. Henderson; Sir Alexander MacEwen; Sir James Macfarlane; Colonel D. J. Mackintosh, M.B.; and Major-General James Thomson, M.B. The secretary is Mr. Niven F. M'Nicoll, of the Department of Health for Scotland.

European Committee for Mental Hygiene

Following on the first International Mental Hygiene Conference, held at Washington in May, 1930, Mr. Clifford Beers, the founder and secretary-general, met some 50 European representatives at the Union Interalliée in Paris on May 29th to initiate preparations for a second congress to be held in Paris in 1935, and to assist in constituting the European Committee for Mental Hygiene. The delegates from England were Mr. L. G. Brock (chairman of the Board of Control), Sir Hubert Bond (senior commissioner). Dr. R. D. Gillespie and Dr. Doris Odlum (joint hon. secretaries of the British Council for Mental Hygiene), and Dr. J. R. Rees (hon. deputy director of the Institute for Mental Psychology, Tavistock-square). The business meetings were followed by scientific sessions held at the psychopathic hospital Henri Rousselle at the invitation of Prof. Toulouse. The subjects included discussions (1) on a report by Prof. Rüdin (Berlin) on the place of eugenics in preventive mental hygiene; (2) on the facilities available in Europe for the treatment of mental disorder without legal formalities; (3) on international unification of statistics in relation to mental disease. A second European reunion is to be held in Rome in September, 1933, by invitation of the Italian representatives. Sir Hubert Bond was appointed British representative on the European executive and Dr. Gillespie the British corresponding member of the European council. Prof. Toulouse was elected president of the 1935 congress with Dr. Genil Perrin as hon. secretary.

University of Birmingham

Mr. William Gemmill, hon. surgeon to the Queen's Hospital, Birmingham, has been appointed joint professor of surgery in place of the late Prof. William Billington.

Harveian Society of London

The Buckston Browne dinner of this society was held at the Connaught Rooms, London, on June 9th, the president of the society, Mr. Cecil P. G. Wakeley, being in the chair. After the loyal toasts, prosperity to the Harveian Society was proposed by Lord Riddell in an amusing speech in which, while he certainly regarded the great Harvey from a new angle, he showed himself quite familiar with the significance of Harvey's discoveries. Speaking as president of the Medico-Legal Society, Lord Riddell said that he desired to show his practical interest in the prosperity of a sister association by instituting a permanent memorial to the signal generosity of Sir George Buckston Browne in connexion with the Harveian Society. He therefore proposed, he said, to present to the Society a loving-cup which should bear an inscription recording the association of the gift with Buckston Browne.

The President, in reply, explained that the annual Buckston Browne dinner, and the Harveian prize and medal, were given by Sir Buckston in memory of his gallant and only son, Lieut.-Colonel George Buckston Browne, who fell in the Great War. He referred to the pleasure which he, and all the members of the Society, had felt in Sir Buckston's knighthood, recalling that they had heard from him, 30 years ago, one of the finest of their series of Harveian lectures entitled "Twenty-five Years of Urinary Surgery in England." Referring to the centenary celebrations of last year, the president reminded the society of their visit to Hempstead Church, Harvey's burial place, when a silver patten was presented to the church by the Society, which also undertook to rehang the bells when the tower was re-erected by the Royal College of Physicians of London. The sum required for that purpose he said was £400, of which £210 had been received, while Dr. Turtle, the treasurer of the Society, would be pleased to receive subscriptions. Mr. Wakeley concluded by suggesting that the loving-cup, which Lord Riddell was presenting, should bear the three names of Harvey, Buckston Browne, and Riddell.

The toast of the Visitors was then proposed by Dr. A. H. Douthwaite, who coupled with it the names of Prof. William Wright, president of the Anatomical Society of Great Britain and Ireland, and Prof. Allen Mawer, provost of University College, London.

Prof. William Wright, in reply, said that it would not be inappropriate to the occasion to add something to the personal history of Harvey. Sir D'Arcy Power's biography, he said, stated that when Harvey's resting-place at Hempstead was first visited by the late Sir Benjamin Ward Richardson in 1847, the lead in which the remains were lapped was already corroded—the result being a rent through which on one occasion a frog jumped out, and from which a thick, dirty fluid oozed. Richardson was anxious to know whether there were still any of the mortal remains of Harvey within, and on a further visit to Hempstead, accompanied by, among others, Sir George Paget, representing Harvey's old college, Caius, he took with him a small mirror, a magnesium light, and other appliances. Paget narrated the sequel to the late Sir William Ridgeway, who was Prof. Wright's informant. It was now found that in the interval, owing to a further collapse of the lead, the rent was almost closed. The party shrank from opening the case and viewing the great discoverer "clothed with all the dishonours of corruption," but yet felt it incumbent upon them to settle whether any of the remains were present or not. At this juncture Richardson took his stick or umbrella firmly in his hand, pushed it through the rent and, moving it up and down, met such obstruction as to convince himself and the other members of the party that no inconsiderable part of the former Warden of Merton was still there. The incident, said Prof. Wright, had, probably for reasons of delicacy, up till now been almost universally suppressed, but he felt no apology was needed for telling the story and relieving the necrolater visiting Hempstead of any dubiety as to the contents of the shrine. This he found to be one more example of the strange tricks which time and fate play with our relics. "Could there be," he asked, "any sharper contrast than that between the fate of Harvey's material remains and his great and glorious spiritual legacy?"

Prof. Mawer also replied.

The guests were numerous and representative, and included the Directors-General of the Navy, Army, and Royal Air Forces, Sir Peter Chalmers Mitchell, Prof. W. R. Halliday, the Presidents of the College of Obstetrics and Gynæcology, the Royal Society of Medicine, the Medical Society of London, the Hunterian Society, the Listerian Society, and the Chelsea Clinical Society.

Dr. Jessie MacGregor Prize, Edinburgh

This prize for the present triennial period has been divided equally between Miss Elsie Porter, M.D. Edin., for her work on the therapeutic uses of drugs of the digitalis group, and Miss Helen May Russell, M.D., F.R.C.P. Edin., for her work on human and experimental relapsing fever. The prize is awarded for original observations by a woman who has qualified in medicine from Edinburgh.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, June 21st.—5.30 P.M., General Meeting of Fellows. Ballot for election to the Fellowship.

Thursday.—2 to 5.30 P.M., Urology. Exhibition of instruments. 5.30 P.M., Sir John Thomson-Walker: Some Changes and Problems in Urology.

Saturday.—Disease in Children. Annual Provincial Meeting at Alton.

MEDICO-LEGAL SOCIETY.

Thursday, June 23rd.—8 P.M. (at 11, Chandos-street, Cavendish-square, W.), Mr. Alexander Paterson: Should the Criminologist be Encouraged? To be followed by a discussion.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.

Wednesday, June 22nd.—5.30 P.M., Sir Thomas Lewis: Recent Observations on the Causation of Raynaud's Disease. (Annual Oration).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, June 20th to Saturday, June 25th.—Prince of Wales's Hospital, Tottenham, N. Post-graduate course in general medicine, surgery, and the specialties. All day. Specially suitable for general practitioners. —Royal Free Hospital, Gray's Inn-road, W.C. Ante-natal demonstration by Prof. McIlroy. Wed., 5 P.M. (These courses are open only to Members of the Fellowship of Medicine.)

ST. PAUL'S HOSPITAL, Endell-street, W.C.

Wednesday, June 22nd.—4.30 P.M., Mr. C. H. Mills: Some Interesting Urological Cases, with demonstrations, specimens, and radiograms.

NATIONAL HOSPITAL, Queen-square, W.C.

Monday, June 20th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Head Injuries.

Tuesday.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Collier: Cerebral Tumours, their Symptoms and Localisation.

Wednesday.—2 P.M., Dr. Martin: Out-patient Clinic.

Thursday.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Pituitary Tumours.

Friday.—2 P.M., Dr. Adie: Out-Patient Clinic. 3.30 P.M., Dr. Symonds: Head Injuries.

ST. MARK'S HOSPITAL, City-road, E.C.

Thursday, June 23rd.—4.30 P.M., Dr. J. K. Hasler: Methods of Anæsthesia in Rectal Surgery.

LONDON JEWISH HOSPITAL, Stepney Green, E.

Thursday, June 23rd.—4.15 P.M., Dr. D. Nabarro: Congenital Syphilis.

ST. PETER'S HOSPITAL, Henrietta-street, W.C.

Wednesday, June 22nd.—3 P.M., Mr. J. Alban Andrews: Injuries of the Urethra and their Treatment.

SOUTH WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Balham, S.W.

Wednesday, June 22nd.—4 P.M., Prof. E. C. Dodds: Biochemistry and the General Practitioner.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.

Wednesday, June 22nd.—4.30 P.M., Mr. Roy Ward: Diseases of the Skin.

ROYAL NORTHERN GROUP OF HOSPITALS.

Wednesday, June 22nd.—3.15 P.M. (at Royal Chest Hospital, City-road), Dr. J. Maxwell: Lung Abscess.

Appointments

Cameron, E. H., M.B., Ch.B. Edin., F.R.C.S. Edin., has been appointed Ophthalmic Surgeon to the Edinburgh Royal Infirmary.

King's College Hospital: Lawrence, R. D., M.D. Aberd., Junior Physician in charge of the Diabetic Department; Cawthorne, Terence, F.R.C.S. Eng., Junior Surgeon in Ear, Nose and Throat Department.

London County Council: B. E. Moss, M.B., B.S. Lond., Temporary visiting medical officer, Edmonton Colony.

Certifying Surgeons under the Factory and Workshop Acts: Davies, D. H., L.R.C.P. Lond., M.R.C.S. (Rhondda, Porth, Glam.); Hadfield, R. H., L.R.C.P. Lond., M.R.C.S. (St. Just, Cornwall); Pettigrew, F., M.B., Ch.B. Glasg. (Wartle, Aberdeen); Sanderson, R. (Uffculme, Devon); and Wood, S., L.R.C.P. Lond., M.R.C.S. (Burnley, Lancs.).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. M.O. for Radium Department.

Accrington, Victoria Hospital.—H.S. £150.

All Saints' Hospital for Genito-Urinary Diseases, Austral-street, West-square, S.E.—Two Hon. Anæsthetists.

Altrincham General Hospital.—Sen. and Jun. H.S. At rate of £150 and £120 respectively.

Banbury, Horton General Hospital.—Res. M.O. At rate of £150.

Bedford County Hospital.—Second H.S. At rate of £140.

Birkenhead County Borough.—Res. Asst. M.O. £350.

Birmingham, Erdington House.—Additional Asst. M.O. £650.

Blackburn Royal Infirmary.—Fourth H.S. £150.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. At rate of £100.

Bristol General Hospital.—Sen. Res. M.O. £200.

British Empire Cancer Campaign, 12, Grosvenor-crescent, S.W.—William Morris Research Fellowship in Radiology. £500–£1000.

Burnley, Victoria Hospital.—H.P. and H.S. Each at rate of £150.

Buxton, Devonshire Hospital.—Asst. H.P. and H.S. Each at rate of £150.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. At rate of £130.

Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.

Cardiff, King Edward VII. Welsh National Memorial Assoc.—Area Asst. Tuberculosis Phys. £500.

Cardiff Royal Infirmary and City County Council.—Hon. Phys. and Visiting Phys. to Dept. of Children's Diseases. £100. Also Lecturer in Children's Diseases at Welsh National School of Medicine. £50.

Carlisle, Cumberland Infirmary.—Second H.S. £155.

Chorley Borough.—M.O.H. and School M.O. £800.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—H.P. At rate of £100.

Colchester, Essex County Hospital.—H.P. Also Asst. H.S. £150 and £100 respectively.

Derby.—Locum Res. Asst. M.O. for Walton Sanatorium, near Chesterfield. At rate of £350.

Dewsbury and District General Infirmary.—Second H.S. £150.

Evelina Hospital for Sick Children, Southwark, S.E.—Hon. Phys. to Out-patients.

Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Second H.S. At rate of £120.

Guy's Hospital.—Sir Alfred Fripp Memorial Fellowship in Child Psychology. £300.

Hospital of St. John and St. Elizabeth, 60, Grove End Road, N.W.—Res. H.P. At rate of £100.

Huddersfield Royal Infirmary.—Cas. O. and Two H.S's. £225 and £150 respectively.

Hull Royal Infirmary.—H.P. at Sutton Branch Hospital. At rate of £160.

Ilford, King George Hospital.—H.S. At rate of £100.

Indian Medical Service.—Appointments Commission.

King Edward Memorial Hospital, Ealing.—Sen. Res. M.O. £250.

Lancaster County Mental Hospital.—Asst. M.O. £500.

Leicester Royal Infirmary.—Hon. Orthopædic Surg.

Lewisham Hospital, High-street, Lewisham, S.E.—H.P. At rate of £80.

Lincoln, Bracebridge Mental Hospital.—Second Asst. M.O. £425.

Liverpool, Alder Hey Children's Hospital.—Med. Supt. £1000.

Liverpool, Royal Children's Hospital.—Hon. Phys.

Liverpool, St. Paul's Eye Hospital.—H.S. At rate of £145.

London Clinic and Nursing Home Ltd, 20, Devonshire-place, W.—Res. M.O. At rate of £200.

London Light and Electrical Clinic, 42, Ranelagh-road, S.W.—Hon. Visiting Anæs. and Two Hon. Visiting Phys.

London Lock Hospital, 91, Dean-street, W.—H.S. to Male Lock Hospital. At rate of £175. Also Surg. Reg. At rate of £100.

London University.—Examinerships.

Llanelly and District Workmen's Medical Committee.—Surg. for Ear, Nose and Throat Dept.

Manchester, Ancoats Hospital.—H.P. At rate of £100.

Manchester Royal Infirmary.—Hon. Asst. Phys. Also Hon. Orthopædic Surgeon.

Middlesbrough, North Ormesby Hospital.—H.P. and H.S. At rate of £120 and £135 respectively.

Miller General Hospital, Greenwich-road, S.E.—Out-patient Officer. At rate of £150.

Norfolk County Council.—Temporary Asst. M.O. 10 guineas weekly.

North Western Fever Hospital, Lawn-road, Hampstead, N.W.—H.P. At rate of £80.

Norwich, Norfolk and Norwich Hospital.—H.S. to Special Depts. £120.

Nottingham General Hospital.—H.S. At rate of £150.

Oldham Royal Infirmary.—H.S. Also Cas. O. and H.P. Each at rate of £175.

Plymouth, Central Hospital.—Res. H.S. At rate of £150.

Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—Cas. O. and H.P. £100.

Queen's Hospital for Children, Hackney-road, E.—H.S., H.P., and Cas. O. Each at rate of £100. Also Ophth. Surg.

Queen Mary's Hospital for the East End, E.—H.S. At rate of £120.

Reading, Royal Berkshire Hospital.—H.S. £150.

Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.

Royal Army Medical Corps.—25 Permanent Commissions.

Royal College of Physicians, Pall Mall, S.W.—Two Leverhulme Research Scholarships. Each £500.

Royal Free Hospital, Grays Inn road, W.C.—Res. Unit Anæs. £150. Also Clin. Assistantships in Special Depts.

Royal National Orthopædic Hospital, 234, Gt. Portland-street, W.—H.S. for Country Branch, Brockley Hill, Stanmore. At rate of £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.

St. Mary Abbots Hospital, Marloes-road, W.—Res. Med. Supt. £1100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Clin. Asst.

Salford Royal Hospital.—Cas. H.S.

Salisbury General Infirmary.—Two H.S's. Each £150.

Sheffield Children's Hospital.—Res. M.O. £175. Also H.P. and H.S. Each at rate of £100.

South London Hospital for Women, Clapham Common, S.W.—H.S. At rate of £100.

Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.

Southampton, Royal South Hants and Southampton Hospital.—H.P. Two H.S's. and Cas. O. Each at rate of £150.

Stirling District Mental Hospital, Larbert.—Third Asst. M.O. £250.

Stockport Infirmary.—Jun. Res. Surg. £150.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Orthopædic H.S. £150. Also Asst. H.P. £125.

Tunbridge Wells and Counties General Hospital.—H.S. £160.

Walsall General Hospital.—H.S. At rate of £150.

West Bromwich, Hallam Hospital.—Sen. Res. M.O. £350. Also Two Res. H.P.'s. Each £200.

West Riding of Yorkshire County Council.—School Med. Inspector. £500.

West Suffolk County Council.—Asst. County M.O. and Asst. School M.O. £500.

Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.

Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. and H.S. Each at rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Stow (Mid Lothian), Stromness (Orkney), and Bathgate (West Lothian).

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Aylesbury and High Wycombe and Chesham County Court districts. Applications for the post should reach the Private Secretary, Home Office, Whitehall, London, S.W. not later than July 2nd.

Births, Marriages, and Deaths

BIRTHS.

Barnsley.—On June 7th, at Ellesmere, Salop, the wife of Dr. Arnold Barnsley (late of Singapore), of a daughter.

Bowers.—On June 11th, at Woodlands, Overstone Park, Northampton, the wife of Captain G. P. Farmar Bowers, I.M.S., of a daughter.

MARRIAGES.

Andrews—Henderson.—On June 1st, at Victoria Memorial Hall, Belfast, Charles T. Andrews, M.D., M.R.C.P., to Mabel L. V. Henderson, M.B., B.Ch.

Cookson—Mitchell.—On June 2nd, at St. Matthew's, Bayswater, Harold Cookson, M.D., to Elizabeth Mary, daughter of the late William Roger Mitchell and of Mrs. Mitchell, of West Kensington Mansions, W.

DEATHS.

Bannerman.—On June 10th, at St. Andrews-street, Cambridge, William Bannerman, M.B., C.M. Edin.

Harvey.—On June 10th, at a nursing home in London, Charles Edward McNiel Harvey, M.B. Edin., M.R.C.S., L.R.C.P Lond., of Beckford Lodge, Sar-la-Mar, Jamaica, aged 66.

Murray.—On June 11th, Herbert Leith Murray, Rodney-street, Liverpool, aged 52.

Seaman.—On June 12th, at Fernside, Hollington Park, St. Leonards-on-Sea, Albert Baird Seaman, Brig.-Surgeon Lt.-Colonel, I.M.S. (retired), aged 89.

Smith.—On June 4th, Hugh Smith, L.R.C.S., L.S.A., R.A.M.C., J.P., of Dixons Green, Dudley, aged 56.

Steele-Perkins.—On June 9th, suddenly, George Steele-Perkins, M.D., of The Arts Club, Dover-street, W., and of Kingsdown, near Deal, aged 75 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Sale of Saunderton Sanatorium.—Saunderton Sanatorium, near High Wycombe, has been sold by the governors of the City of London Hospital for Diseases of the Heart and Lungs to the Buckinghamshire county council for use as an isolation hospital. The hospital cannot continue to afford the expense of maintaining an independent country establishment, and patients will in future be sent from London to various convalescent homes by arrangement with the almoner.

NOTES, COMMENTS, AND ABSTRACTS

THE FIRST INTERNATIONAL CONGRESS ON ASTHMA

(FROM A CORRESPONDENT)

WITHIN the last few years research on asthma has received increasing attention throughout the world, and nowhere more than in England and Scotland since the formation of the Asthma Research Council five years ago. The time is fitting therefore for an international congress, and the meeting on June 4th–5th was successful not only because it set out divers views and interests, but also because it gave individual workers a chance of discussing problems with one another. Probably no better place could have been chosen than Mont Dore, "Providence des asthmatiques," whose associations with asthma date back even to Roman times.

The Scientific Sessions

The congress was held under the presidency of Prof. Fernand Bezançon, of Paris, and was attended by about 400 visitors, many of the medical men being accompanied by their wives and families. In his opening address Prof. Bezançon dealt with the Evolution of our Knowledge of Asthma, discussing the various ætiological theories that have held sway, and drawing particular attention to the pioneer researches of Widal and his co-workers.

The *nervous element* in asthma was discussed by Prof. P. L. Abrami and Dr. E. Bernard (Paris) and Prof. R. J. S. McDowall (London). Whilst the former speakers dealt with the production of bronchospasm through nervous channels either reflexly or through psychic stimuli, Prof. McDowall drew attention to the local production of bronchospasm through a liberation of histamine in the bronchi by numerous strains of gram-negative bacilli which Dr. F. A. Knott has described. Two interesting communications dealing with this aspect deserve mention. Dr. P. Dodel (Clermont-Ferrand) described the experimental production of asthmatic dyspnœa in animals by provoking a bronchitis with chlorine and then giving infinitesimal doses of pilocarpine which were without effect on normal animals. In its clinical application such work bears out the oft-observed fact that asthma has frequently followed lung affections and gassing during the war. Dr. J. André (Mont Dore) described some high creatinine values in the blood during attacks, and suggested creatinine estimations as a chemical test of the vagosympathetic tone in asthma, high values occurring with a state of vagotonia, low values with sympatheticotonia.

The rôle of *anaphylaxis and allergy* in the ætiology of asthma was ably discussed by Prof. Pasteur Vallery-Radot (Paris), who concluded that all asthma was not anaphylactic. Prof. C. Frugoni (Padua) described the production of asthma in normal children by the transference of blood from asthmatic sufferers. Prof. Storm van Leeuwen (Leyden) gave an interesting account of the various factors of soil and climate as they affect asthma in Holland, and of his methods of removing these "climate-allergens" by the use of allergen-proof chambers.

Local factors in the bronchi and nose, such as hypertrophy and infection, were dealt with by Dr. Haibe (Namur) and Prof. E. Halphen and Dr. H. Bourgeois (Paris). The indications for surgical intervention and the therapeutic value of vaccines were discussed, but the end-results of either were not very convincing. Dr. R. Leroux (Paris) described the characteristic formation of polypi in the nose and antra, and Dr. Bloch (Paris) the histological structure of these polyps, which included eosinophils and Charcot-Leyden crystals.

The importance of the study of asthma in *infancy and childhood* was stressed in the reports of Drs. Lesneé and G. Dreyfus-Sée (Paris) and Dr. Péhu (Lyons). The ætiology, symptoms, diagnosis, and treatment were discussed in full, and tallied largely with observations that have already been published in England. With regard to treatment, the children in France appear to get much more injection-therapy (specific allergens, vaccines, blood, milk or peptone) than seems necessary in England.

Hepatic insufficiency and *endocrine dysfunction* were suggested as important ætiological factors in asthma by Prof. V. Cordier (Lyons) and Dr. Léopold Lévi (Paris), whilst Dr. A. Schlemmer (Mont Dore) described the liver as being enlarged and tender to palpation in over half the cases he had seen. Though a large number of suggestions were made as to what function of the liver was at fault, and how it produced the asthmatic state, no conclusive proof was presented by liver function tests or controlled dietetic regulations of hepatic insufficiency. Most of the discussion on endocrines concerned the thyroid gland, since its function could be estimated by studies of the basal metabolism. Hypothyroidism was present much more frequently than hyperthyroidism, though both could be associated with the asthmatic state.

Probably one of the most interesting subdivisions for discussion was that of the *biochemical basis of asthma* and other allergic conditions, which was opened by Dr. G. H. Oriel (London). Dr. Epstein (Geneva) gave a very interesting communication on acid-base disequilibrium in asthma, and Dr. F. T. Harrington (Newcastle) discussed the important part played by the stomach, dyspepsia being a constant symptom in the majority of asthmatics. Dr. George Bray (London) outlined the importance of the hereditary factor in allergic conditions; it could be elicited, he said, in two-thirds of all cases, which no treatment known at present appeared to influence. Dr. Jacquelin (Paris) discussed the relative incidence of other allergic conditions in asthmatic patients and their families.

The last session dealt solely with *treatment*. Dr. E Joltrain (Paris) dealt with the general treatment of the asthmatic attack, whilst Dr. de Gennes (Paris) spoke on the treatment of the asthmatic individual. The subject was dealt with rather in text-book fashion in the opening papers, but the smaller communications were of great interest. Dr. Epstein (Geneva) dealt with attempts to treat the asthmatic by modifying his acid-base equilibrium towards the acid side; Dr. Brabant (Brussels) described a method of treating asthma by shock, and Dr. Pepère (Mont Dore) by blood-letting. Physical treatment by radiotherapy and actinotherapy seems to play a more important part in the treatment of asthma in France than elsewhere.

Treatment at Mont Dore.

Of great interest to the visitors was the account of the principles of treatment and the action of the waters of Mont Dore, given by the local physicians, Drs. Galup, Robert, and Bouchon. They restrict themselves to the therapeutic use of the waters and gases which are peculiar to the place, and do not, as a general rule, advocate treatment that can be obtained elsewhere. The visitors were conducted over the thermal establishment each morning in small groups by the various doctors of the station, and the various methods of "taking the waters" were described and seen. The waters are warm and quite pleasant to the taste, and the free gas is mildly stimulating to the nasal mucous membrane. They contain carbonic and hydrochloric acids in solution, with traces of silica, arsenic, and other metals. Ten to twenty minutes in the inhalation chambers leads to intense peripheral vasodilatation, and later to relief of an impending attack. The patients stated that inhalation was far superior to drinks or douches of the water, whilst nasal complaints were greatly alleviated by the nasal inhalation of the pure gas.

The English visitors included Prof. McDowall and Drs. Oriel and Bray (London), Dr. Harrington

(Newcastle), and Dr. H. H. Moll (Leeds). It was unfortunate that the German, Argentine, Spanish, American, and Rumanian representatives, after forwarding their contributions, were at the last moment unable to attend. All the opening papers were collected into book form in French before the congress, and may be obtained from Massón et Cie, Libraires de l'Académie de Médecine, 120, Boulevard Saint-Germain, Paris. The numerous interesting communications and discussions will be printed in a companion volume at a later date.

The social arrangements were excellent, and the physicians and the municipality of Mont Dore are to be congratulated on their organisation, munificence, and zeal.

IN DEFENCE OF EXPERIMENTAL RESEARCH

DURING the last few weeks two spirited attacks on those who would impede the progress of medicine have been delivered. Lord Moynihan, in an appendix to the Romanes lecture delivered in the Sheldonian Theatre at Oxford on June 1st, which has since been published in pamphlet form,[1] set out his position in the following words :—

> "Here let me frankly face criticism that has been directed against the methods of our laboratories, and has resulted in a most lamentable impediment to the advance of medicine. Without experiment on living animals, that advance, already greatly hampered, cannot continue. I recognise and endeavour to understand the motives which animate powerful bodies of noble and highly gifted men and women who are opposed to experimental methods. No right-minded man ever wishes to inflict suffering upon man or animal. That is abhorrent to us all. Opposition to animal research, I firmly believe, is based upon lack of appreciation and understanding ; as it is certainly supported by grievous and, I think, unpardonable misstatement. Day by day for many a year it has been my happy duty to operate on men, women, and children who now number a goodly company, in order to save life or bring relief. My heart is full of compassion. I cannot bear to cause or even to hear of suffering. Every one who has experience of laboratory work knows how little pain is inflicted, and what steps are always taken to minimise or abolish it. Yet the slight distress we must occasionally impose in our work upon man is greater in intensity, and far more protracted, than any suffered in our laboratories. It is simply not the truth to say that pain is wantonly, or unavoidably, inflicted there. The experimenter who excites suffering defeats his own aims : for pain changes the issues he seeks to discover. Physiologists and surgeons are the most humane of men. The necessities of their work would impose this quality if it were not already possessed. The whole anti-vivisection campaign, though a great testimony to the tenderness of heart of its supporters, has no slightest foundation in truth, and is a witness to their shut-mindedness and credulity."

In the sixth Stephen Paget lecture given to the Research Defence Society at the London School of Hygiene and Tropical Medicine on June 15th, Sir Arthur Keith, F.R.S., emphasised

THE MODERN CONFLICT BETWEEN SENTIMENT AND REASON

He spoke of the contrast between physical experiments, which evoked an intellectual response, and physiological experiments in which hearts as well as heads were challenged. Not all kinds of living matter exercised this power. Botanists were untroubled thereby, but experiments on sentient animal matter evoked feeling in the experimenter as well as in the onlooker. Herein lay a critical difference between experimental physics and experimental biology. The physicist had to satisfy only a single or scientific ideal ; the experimental biologist had to satisfy an ethical as well as a scientific standard. The conflict between sentiment and reason, as carried on to-day, found its sharpest expression in the opposition offered to the beneficial work carried on by experimental physiologists. The antivivisection crusade was only an acute manifestation of a conflict which permeated modern society—a conflict in which blind sentiment is ranged against clear reason. Minor manifestations of the same conflict were met in all departments of medicine. Every medical measure which aimed at an ultimate cure by the infliction of immediate suffering entailed a repression of feeling on the part of the prescribing physician. The judge on the bench had to divest himself of his natural instincts if he was to administer law to the criminal in the dock. The crowd, bemoaning the terrible end that awaited the man in the condemned cell forgot the justice due to the woman whom the criminal had widowed. No parent ever administered punishment to a child, however deserved and salutary the punishment might be, without a conflict between reason and sentiment. There was a growing feeling amongst teachers that physical punishment, administered to scholars, was an unjustifiable form of cruelty. Sentiment asserted itself more and more as a ruling force. The repugnance to eugenical measures of a surgical nature sprang from sentiment, not from reason. Amongst all highly civilised peoples there was a growing tendency for feelings to dominate reason and for sentiment to be accepted as a guide in life rather than intellect. These changes were vaunted as sure signs of human progress. If sentiment and feeling were to subjugate and enslave reason—as now they threatened to do—then the ultimate result for civilisation would be, not progress—but disaster. The conflict in which the members of the Research Defence Society were now engaged was not merely to vindicate the right of medical men to carry out inquiries which were lawful under the Act of 1876, but also to demand that in settling all issues relating to the life and death of a community reason as well as sentiment must have a say in the decision.

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[1] Oxford: Clarendon Press. 1932. Pp. 64. 2s. 6d.

DRESS REFORM FOR THE MALE

AN association named the Men's Dress Reform Party has issued a notice, "to those whom it may concern," of a dinner, at which a debate on dress reform for men has been arranged. The dinner will take place at the May Fair Hotel, London, on Friday, June 24th, and early requests for tickets should, it is suggested, be made to Dr. A. C. Jordan, 82z, Portland-place, London, W., who is acting as honorary secretary. The price of tickets for men and women alike is 12s. 6d., exclusive of wine. The notice claims that the party will be "the sartorial event of the London season," and, with regard to the male attire thereat, we are informed that men may "adopt healthy and decorative styles in accordance with their fancies," while the less adventurous may appear in a dinner jacket. Dr. C. W. Saleeby will act as chairman of the ensuing debate, when a motion will be put forward by Mr. C. E. M. Joad and seconded by Dr. Haden Guest, that "Man must be Redressed." The motion will be opposed by Mr. D. Anthony Bradley, and it is hoped that among the leading speakers will be Canon Percy Dearmer and Mr. Ernest Thesiger.

JEAN ATHERTON

WE are informed that Jean Atherton, alias Mary Beale, alias Millicent Aldridge, was sentenced as "the most persistent begging-letter writer in the country" to 18 months' imprisonment at the recent London Sessions. We have made allusions in these columns to her methods, because, on the plea that she was the daughter of a "Dr. Thomas Beale," she made frequent appeals to the medical profession, who, therefore, might find a warning useful.

HOSPITAL FINANCES AT HASTINGS.—The Royal East Sussex Hospital is tackling its financial situation efficiently, and at the annual meeting it was stated that the excess of expenditure over income was only £902 as compared with £2414 the previous year. The average cost per week per patient fell to £2 17s. 2·28d. from £3 2s. 2·23d., while £549 was received in respect of street accidents, leaving a deficit of £904 to be found out of the hospital's ordinary income. Attendances of both in-patients and out-patients increased.

ADDRESSES AND ORIGINAL ARTICLES

THE REACTIONS OF THE EYE TO GENERAL DISEASE*

By F. A. Williamson-Noble, M.B. Camb.,
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ASSISTANT OPHTHALMIC SURGEON TO ST. MARY'S HOSPITAL, AND TO THE NATIONAL HOSPITAL, QUEEN-SQUARE; ASSISTANT SURGEON TO THE CENTRAL LONDON OPHTHALMIC HOSPITAL

Reactions of the Lens to General Disease

The lens has several peculiarities; it continues to grow throughout life, it has no blood-supply, and it has an auto-oxidation system of its own. This system is interesting and is probably effected through a sulphur-containing amino-acid known as cysteine which on oxidation yields cystine, the process being reversible (as a hydrogen atom is replaced by one of sulphur). In the lens these acids are probably combined with glutamic acid, in a form known as glutathione, and the presence of this substance seems to be essential to the proper functioning of the lens, since it is absent in cataract.[1] It probably acts as a carrier of oxygen in much the same way as does hæmoglobin.

The first disease which occurs to one in connexion with the lens is, of course, diabetes, with its well-known complication of diabetic cataract. There is another complication, however, which is quite common though not so well known, and that is alteration in the refractive index of the lens. This is of great clinical importance; what probably happens is that, as a result of alteration in the osmotic pressure of the eye fluids, accompanying the rising sugar concentration in the blood, fluid tends to enter the lens. This makes it bulge, increases its convexity, and so renders the eye more myopic, a change which may take place without any development of cataract.

I have myself seen as much as 20 dioptres of myopia develop in the course of diabetes. The converse may also occur with sudden decrease of sugar, and Duke-Elder[2] records a case in which 6 dioptres of hypermetropia and a marked change in astigmatism developed after three days of vigorous insulin treatment. The importance of this is that, if one is guided by the vision alone, quite a false impression may be created as to the usefulness of the eye.

My old lady, for example, who developed her 20 dioptres of myopia had also a little cataract, and if one had been content to estimate her visual powers by what she could see with glasses ordered six months previously, one would have assumed that she needed a cataract extraction, whereas all that she needed really was the addition of 5 dioptres or so to her last correction in order to obtain useful vision again.

Duke-Elder's case was more dramatic, since the patient complained of blindness, though vision with correction of the acquired hypermetropia was 6/9 in one eye and 6/12 in the other.

Mr. Percy Fleming tells an amusing story concerning a diabetic patient aged about 47. When he was dieting and playing the game, he was emmetropic, and required glasses for presbyopia. If, however, he let himself go, and indulged a passion he had for eating sweets, his eyes became sufficiently myopic to enable him to read without glasses. All one had to do, therefore, to see whether he was sugar-free or not, was to ask him to read. If he put on his glasses he was sugar-free; if not, he was glycosuric.

The moral of all this is that if visual acuity is to be taken as the criterion of utility of the eyes in a case of diabetes, an accurate determination of the refraction must first be made. A useful tip, in cases where this cannot be done, is to take the patient's vision when he is looking through a stenopæic hole. The process is very simple; all that is necessary is to make a pin-hole through a piece of cardboard and ask the patient to look through it. If his vision is improved appreciably, it is almost certain that an error of refraction is present.

Tetany and dystrophia myotonica are two other diseases associated with cataract. Both of these are rare, but tetany is interesting because it was thought to throw a light on the pathogenesis of senile cataract. Calcium deficiency is a characteristic of the disease, and it has been proved fairly conclusively that this is also the cause of the cataract associated with it. Kirby,[3] experimenting on embryo chick lenses in tissue culture, found that the cells would stand relatively large increases in the calcium content of the culture medium without showing any great differences in appearance, growth, or activity. On the other hand, relatively slight reductions of the calcium content of the medium produced toxic reactions in the cells. Such an observation immediately suggests calcium deficiency as a cause of senile cataract, and therefore parathyroid administration as a means of treatment. Dorothy Adams,[4] however, found that the lenses removed for senile cataract actually contained a higher percentage of calcium than normal ones, and that the serum calcium was also higher, so, although calcium deficiency is a cause of a tetany or a parathyroid cataract, it does not seem to be the cause of the senile variety. In all probability the calcium increase in the latter is merely an indication of loss of function of the lens capsule, since this membrane, when in a healthy condition, acts as a semi-permeable one and has a remarkable power of allowing potassium to enter the lens and of excluding all but a small proportion of the calcium.

Dystrophia myotonica is chiefly of interest from the hereditary point of view. Fleischer, in his classical report published in 1918, described a number of instances of myotonic dystrophy among his cases of presenile cataract. An interesting observation made by Knusel is that post-operative cataract following accidental parathyroidectomy is nearly identical with that developing in muscular dystrophy. It is possible, therefore, that the latter disease is attributable to parathyroid insufficiency.

Tuberculosis

In opening a discussion on ocular tuberculosis three years ago Dr. R. A. Young[5] said:

> "It is a significant and healthy sign of the times that in both medicine and surgery we are becoming more catholic in our outlook, and realising that co-operation is better than purely departmental discussion, especially in difficult matters arising in the border zones of our respective fields of work."

In this subject I am on the borderline between ophthalmology and general medicine, and it is not difficult to stray too far over that line. It has, in fact, been my object in preparing these lectures to sit, so to speak, on the hedge between general medicine and ophthalmology, or—to put it another way—to convert what might be regarded as a no-man's-land between these two departments into an everyman's land.

The importance of tuberculous infection in the ætiology of eye disease is becoming more and more evident, and, except possibly in the conjunctiva, the infection is blood-borne; therefore the portion of the eye most commonly affected is that which is most richly supplied with blood-vessels—namely, the uveal tract, comprising the iris, ciliary body, and choroid.

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* The second Lettsomian lecture for 1932, delivered before the Medical Society of London on March 7th. The first lecture appeared last week, and the third lecture will appear in a coming issue.

The classical descriptions of the reactions of the uveal tract to the tubercle bacillus are familiar but are worth recalling with a few additions to the ordinary text-book varieties. The two forms of tuberculosis, miliary and confluent or conglomerate, may occur in the eye in the same way as they do in other parts of the body, but there are also other varieties. Finoff[6] describes four different types in the iris. The first is a diffuse infection which may be so acute in onset as to resemble other types of iritis, though more usually it is gradual and painless. Nodules generally appear later in the iris stroma and make the diagnosis clear. Also the deposit of inflammatory products on the back of the cornea occurs in a characteristic manner, forming relatively large, unpigmented spots, supposed to resemble mutton-fat and therefore called "mutton-fat K.P." The second variety is the miliary, where nodules in the iris are generally greyish-red or yellow in colour and develop at the margin of the pupil or its ciliary border without preceding iritis, these nodules being 2–3 mm. in diameter. They may undergo absorption or spread, involve the cornea, and lead to perforation of the globe at the corneo-scleral junction with subsequent shrinkage of the eye. This form of lesion, when progressive, is most commonly associated with diffuse miliary tuberculosis and involves the whole uveal tract, the patient often dying before the disease has had time to run its full course in the eye. Hæmorrhages into the anterior chamber often occur in this variety of the disease.

In the third type, the conglomerate form, a yellowish nodule grows, usually from the periphery of the iris, covered sometimes with smaller nodules, and steadily increases in size, until the globe is perforated. These nodules are sometimes mistaken for malignant growths. The ciliary body may become infected without involvement of the other parts of the uveal tract, but in this stage the infection is usually overlooked because so few signs and symptoms are produced. The condition is of importance from a purely ophthalmic point of view, however, because it may frequently form the starting-point for other forms of ocular tuberculosis, extension occurring either forwards or backwards. In the early stages the only sign may be the presence of some mutton-fat deposit on the back of the cornea.

When the choroid becomes involved, the lesion again may be of the miliary or conglomerate type, or it may simulate the disseminated variety commonly produced by syphilis. Miliary tubercles of the choroid have a special importance in the diagnosis of tuberculous meningitis. They appear as small grey or yellowish, round or oval spots near the posterior pole of the eyeball. Their size varies from one-half to one-third of a disc diameter and they are slightly elevated, so that the retinal vessels bulge as they pass over them. Their appearance usually marks a terminal stage in the disease, so that little change occurs in the ophthalmoscopic appearances but, should the patient survive, the affected areas cicatrise, leaving brilliantly white spots with a margin of dark pigment.

It is important to realise that there is another form of miliary tuberculosis of the choroid which has not the same gloomy prognostic import so far as life is concerned, though the affected eye is frequently lost from glaucoma, secondary to the accompanying cyclitis. The occurrence of this cyclitis is an aid in the diagnosis, as is also the fact that the tubercles are not always localised to the posterior pole of the eye, but may be seen also in the periphery and are frequently present in one eye only.

Conglomerate tuberculosis of the choroid is uncommon disease and scarcely needs descriptio since the name almost explains itself, the lesion co sisting of a large single nodule which may resemble intra-ocular tumour.

Of great interest, to my mind, is the question how and why the eye should react in the way it do to the presence of the tubercle bacillus. The first poi brought out by investigation is that the eye does n always react in the classical way. This, of course, disappointing but not unexpected: Urbanek, Vienna, investigated in detail 500 cases of uveitis di to tuberculosis and reported the results in a compr hensive monograph. The diagnosis was supported X ray examinations of the chest, by transmission tuberculosis to animals from the blood of patients wh the eye was at the height of a relapse, and by t response to a tuberculin, though this last test is n a reliable one, if Sir Almroth Wright's work on t non-specific immunising effect of tuberculin is to accepted. Urbanek's conclusion is an important one namely, that there is no typical clinical or pathologic picture that indicates a tuberculous process in the Even the slit-lamp and corneal microscope were not be relied upon, and every type of iritis could mimicked by the tuberculous form. Gonococcal iriti as I have already mentioned, has long been regarde as a clinical entity and in the majority of cases is s yet Urbanek states that the typical gelatinous cond tion of the aqueous may occur in a purely tuberculo infection. The commonest type of lesion is benig not associated with any of the disastrous sequel such as perforation of the globe and general dissemin tion of tuberculosis, which occur in the so-calle classical forms. The reason for this, I hope to sta presently, and also the reason why tuberculin, so litt used in disease of other parts of the body, appears give such good results in ophthalmology. I we remember Dr. R. A. Young, in the discussion to whic I have already alluded, telling us the dangers of th reagent in the pulmonary forms of tuberculous disea and of its relative safety—if given intelligently— the surgical varieties of tuberculosis.

It is a great pity that tuberculous infection of th uveal tract should not always show definite pathogn monic changes, because the area affected is in man cases so minute that if any other organ were involve it would probably cause no symptoms beyond sligh general malaise, whereas in the eye the effects a apparent at once—i.e., we probably get, quite ofte in the eyes an early indication of tuberculosis whic may be of great clinical importance but may easily overlooked. Time in these cases is, so to speak, th essence of the contract, and the sooner the diagnos is made and the patient is brought under the influenc of treatment, the greater the chance of ultimat recovery.

ALLERGY IN OPHTHALMIC TUBERCULOSIS

A vast amount of work has been done on the reaso why the eyes develop these changes in the presenc of the tubercle bacillus, and one of the most interestin accounts of it is given by Rich and McCordock. In the first place they draw a distinction betwee immunity and allergy; the former is a reaction whic leads to the death of the bacilli and, if they are a killed, to the cure of the disease. Unfortunately however, when the bacillus dies, the proteins which i contains are liberated, and if the patient is allergic the cause various reactions according to the sensitivit of the patient and the amount of protein liberated If the patient is not allergic, nothing happens, but if h is, the relatively bland products of the breakdown o ubercle bacilli are converted into powerful irritants nd poisons without any apparent gain to the organism in the way of immunity. Tissue necrosis is regarded by these workers as being almost entirely the result of allergic hypersensitiveness to tuberculo-protein, hough the formation of tubercles does not appear to be a reaction of this type. This was shown by the observations that the formation of tubercles can be brought about by a lipoid extracted from the bacillus, which lipoid does not of itself produce any allergic changes. For the production of allergy it is necessary to use whole bacilli, and it appears that it has not yet been possible to extract from them the true sensitising antigen. A striking example of the bad effects of allergy was given by some tissue culture experiments performed by Rich and Lewis.[8]

> They placed thoroughly washed blood-cells and fixed connective tissue cells of allergic and normal guinea-pigs in the plasma of the normal and allergic animals. The same amount of tuberculin was then added to all the cultures. The cells from the allergic animals were regularly and promptly killed when exposed to tuberculin, regardless of the plasma in which they were placed, while the cells from the normal animals, regardless of the plasma in which they were placed, remained alive and multiplied when exposed to the same concentration of tuberculin which rapidly killed the allergic cells.

Allergy therefore seems to be a very real thing, and its occurrence accounts for the mild attacks of what would clinically be termed non-tuberculous iritis. It is conceivable, for example, that a healed focus of old tuberculosis may light up as a result of extreme exhaustion. The tubercle bacilli are disintegrated, as the patient has acquired immunity, but in their disintegration they set free tuberculo-protein. Unfortunately the patient is also allergic and therefore develops the so-called tuberculide iritis.

It appears from these observations that tuberculous disease of the eye is probably a good deal commoner than most ophthalmologists imagine and that, far from being the malignant and destructive type of lesion usually described, it may assume relatively benign forms. Moreover, some cases may not be due to actual lodgment of tubercle bacilli, but may merely represent the allergic reaction of the eye to the presence of tuberculo-protein in the blood. Though such an hypothesis has not yet met with universal acceptance, there is no question in my mind that a number of cases of obstinate infection of the uveal tract and of the cornea do better with tuberculin than with any other form of treatment.

THE RETINAL VESSELS

Before finally leaving this (to me) fascinating branch of ophthalmology there is one other point I should like to mention, and that is the occurrence of tuberculous disease of the retinal vessels. Eales first described the syndrome of recurrent vitreous hæmorrhages in apparently healthy young patients, a condition ascribed in many cases to tuberculous perivasculitis, eating away the vessel wall and allowing the escape of blood. Histologically, the perivascular infiltrates often contain large numbers of epithelioid cells, but since the same type of infiltrates can be produced in animals by repeated injections of blood into the vitreous, their presence does not prove a tuberculous ætiology.

High Blood Pressure

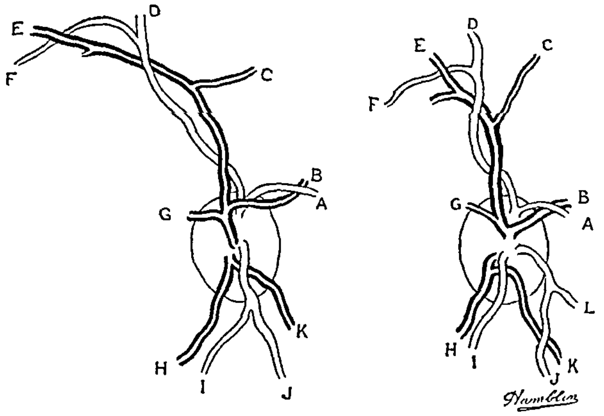
The changes in the eye associated with high blood pressure are of great clinical importance. In the first place, the retina is morphologically a portion of the brain and, from the clinical standpoint, it is the condition of the cerebral circulation which most closely concerns us in cases of vascular disease. Foster Moore[9] has found that as many as 70 per cent. of cases of gross cerebral vascular lesions show signs of retinal arterial degeneration, and, conversely, that 44 per cent. of cases showing ophthalmoscopic signs of vascular disease develop gross vascular lesions within a period of seven years. In the second place, the eye is the only portion of the body where the cerebral vessels are, so to speak, open to inspection and the dioptric arrangements are such as not only to render the vessels visible, but actually to magnify them 14 diameters. It is not surprising, therefore, that the ophthalmologist, by his routine examination of the fundus, is often the first person to discover the presence of vascular disease. An enormous literature has grown up recently around this subject, and, by way of clearing the ground, it will perhaps be best to follow the example of Friedenwald[10] and review the changes observed in the vessels.

VARIATION IN CALIBRE

The retinal circulation is a little unusual in that the larger vessels, although morphologically arteries, resemble arterioles in the thinness of their walls and the paucity of their muscular layer. The first and most important change, to my mind, is localised variation in calibre. The condition is not by any means conspicuous and, unless carefully sought, may easily be overlooked. One is apt to think, from reading descriptions of cases, that deformation of the veins at the arteriovenous crossings is a sine qua non of retinal arteriosclerosis, but I have seen quite definite nipping of the superior temporal vein by the artery in perfectly healthy children, and I have seen no nipping at all in cases where the systolic blood pressure was over 200 mm. Hg. There was, however, a tell-tale diminution in calibre of the inferior nasal and the superior temporal arteries. Mylius[11] is inclined to attribute some of the localised constrictions to a spastic contraction of the arterial wall, but the majority of authors consider the condition to be atheromatous and to be an extension of a similar process affecting, in greater degree, the central retinal vessels in the nerve. Moreover, atheromatous plaques can be found in the affected vessels post mortem by suitable staining methods. Whatever the explanation, there can be no question of the great clinical importance of the sign, in spite of its relative inconspicuousness.

In addition to the localised variations in calibre of the retinal arteries, there is often a generalised attenuation. The vessels so affected are often straight, instead of being curved, as in the normal eye, and usually give off their branches at an acute angle. One would expect this attenuation to be due to thinning of the blood stream, consequent on thickening of the vessel wall and cicatricial contraction of the artery, but such is not the case, histological examination failing to reveal any evidence of such a change. In fact these attenuated vessels are often found to have walls which are thinned rather than thickened. Friedenwald[10] adduces a very interesting theory to account for the condition. The arteries contract, not only in diameter but also in length, and this change can be well shown by figures (see p. 1348) reproduced from his article. They show the changes occurring in the vessels after the lapse of 15 years in a case of retinitis associated with massive exudation. The arteries are drawn in thin lines and the veins in thick ones. It appears as though all the superior temporal vessels had been pulled upward and outward, but the inferior vessels show an even more marked change. In 1914 the two main branches emerged separately from the disc, whereas in 1929 the junction of the two vessels *i* and *j* had been pulled down about one and a half disc-diameters. Presumably in this case the portion of the artery in the distal end of the nerve was not sclerosed, and was therefore capable of extension.

Another observation which fits in with this was made many years ago by Marcus Gunn. Small petechial hæmorrhages are not uncommon in retinal arterio-sclerosis, and careful examination will sometimes disclose the presence of a minute curved arterial twig, just near the hæmorrhage. Gunn's explanation was to liken the artery under tension to a hair drawn between the thumb-nail and forefinger—the hair curls up—and to say that the hæmorrhage represented the point where the artery had become detached from the retina. In the case quoted by Friedenwald the lesion was primarily in the retinal vessels, the condition being a rare one known as massive exudative retinitis. In some varieties of arterio-sclerosis, however, the central retinal vessels are probably affected even more severely during their neural than during their retinal course, and the result of this is that a sort of tug-of-war ensues, in which the neural vessels quite frequently prevail. For this reason one often finds more arterial branches crossing the edge of the disc in cases of sclerosis than in cases with normal fundi, the inference being that the vessels have become, so to speak, sucked into the disc. It is not surprising, therefore, that the retinal arteries should, in this disease, follow the Euclidean rather than the Einsteinian conception of a straight line and that the branches should be given off at acute angles.



Shows changes in the retinal vessels after 15 years. The drawing on the right shows the condition in 1914; that on the left in 1929. (Friedenwald.)

THE ARTERIAL LIGHT REFLEX

The second point to notice is the condition of the arterial light reflex. This is rather a trap for the unwary, since its brightness depends on the type of ophthalmoscope used, the size of the patient's pupil, and the general pigmentation of the fundus. A bright reflex is therefore of clinical value only when it is intense, when it varies greatly in different branches of the arteries, and when it is associated with other pathological changes. Irregularity of the reflex with beading is, of course, of value, since it indicates alterations in the arterial calibre.

THE ARTERIO-VENOUS CROSSINGS

The phenomena at the arterio-venous crossings again may be fallacious, since it is not impossible to have definite compression of the vein by the crossing of a perfectly healthy artery. Why this should be so, I do not know, unless it be caused by undue softness of the venous wall, and possibly by some distension of the vein itself. Nipping of the vein per s is not therefore sufficient grounds for the diagnos of retinal arterio-sclerosis and, since the sclerosis essentially patchy and may not affect the portion artery crossing the vein, its absence is also of no grea significance.

There are two other points which may help in th diagnosis of pathological changes at the arterio-venou crossings. The first is the presence of white lines alon the sides of the artery. In its extreme form this i known as pipe-stem sheathing and is due to perivascu litis, the artery being bordered by thick white line which may meet over the vessel's anterior surface s as to hide it completely. In its minor form these line are nothing like so conspicuous, but against the back ground of the vein at the point of crossing a definit white line may be detected on each side of the arter It is important not to confuse these with the whit lines which sometimes border the arteries during short part of their course from the disc, since the latte are physiological, being due merely to an extension o *the fibrous tissue of the disc.*

The second point concerns the distortion of the vein A healthy artery will usually cross the vein at an acut angle, without any alteration in the course of the latte In disease, however, the vein may often be twisted s as to allow the vein to cross under the artery as nearl as possible at right angles. The same phenomeno may occur when the vein crosses in front of th artery, and should this change be found, there nee be no doubt of the pathological condition of the vessel Loss of translucency of the artery at the crossing i another point which sometimes helps in diagnosis but it is not easy to estimate its degree.

The condition of the small vessels passing to th macula may be of great importance in cases o arteriolar sclerosis. In fact, in some cases of vascula disease of the most serious type these may be the onl vessels showing any visible change. In parentheses it may be noted that, in order to see them, it is usuall necessary to employ a mydriatic, and that in ol people, when resultant glaucoma may be feared, tw drops of 5 per cent. cocaine instilled at five-minut intervals will often produce a useful mydriasis i 30 or 45 minutes. The changes observed in thes vessels are an alteration in their course, whereb they become corkscrew-like, and an increase in th brightness of their reflex, which renders them lik silver wire.

The veins seldom show sclerotic changes except in the advanced cases. Sometimes they may be bordered by white streaks, but in most cases these are due to the presence of wandering cells carrying off detritus from retinal degeneration, secondary to arterial disease.

Classification of Vascular Anomalies

Having described the various changes which are observable in the retinal vascular system, I should now like to sort them out a little. Many attempts have been made to group these cases, and the latest and best, to my mind, is that adopted by Friedenwald, who defines six groups, of which we need consider only four, as the last two comprise syphilitic arterial disease and arterio-sclerosis depending on local disease in the eye.

The first group is *hyperpiesis without retinal arterio-sclerosis*, and comprises cases of great clinical diversity, such as acute nephritis, mild toxæmias of pregnancy, and hyperthyroidism.

The second group is *retinal arteriolar sclerosis*, and is important because all the cases which could be followed over a sufficiently long period developed renal (albuminuric) retinitis, and clinically they were all associated with very high blood pressure. In the early stages the changes found comprise those I have already described in connexion with the small arteries in the macular region—irregular tortuosity, localised variations in calibre, and visibility of the walls. The large arteries may be full and tortuous and usually compress the veins markedly. Although this type of fundus change is followed by renal retinitis, anatomical investigations have failed to show any close association between it and the arteriolar sclerosis of the renal blood-vessels.

The third type is *retinal arterio-sclerosis with hypertension*. The principal feature of these cases is reduction in calibre and length of all the arteries, which therefore take a straight course and branch at acute angles. Associated with this change there are usually arterio-venous compressions and local variations in calibre. Clinically these changes are usually associated with arterio-sclerosis of a slowly progressive type in elderly patients, though they may occur in younger people, when the prognosis is correspondingly more grave. If the condition persists for long, it may go on to the production of a type of retinitis.

The fourth group is *retinal arterio-sclerosis without hypertension*, in which the fundus picture shows arterio-venous compression, variations of calibre, and visibility of vessel walls, but the main arterial branches are full and tortuous. There may also be scattered hæmorrhages and retinitis. The prognosis in these cases is rather doubtful, as the vascular lesions have an uneven distribution, but in general they show little renal involvement. The prognosis in young people is of course more grave.

If sclerosis should persist in the retinal arteries over a period of years, the retina itself may begin to show changes and develop a so-called retinitis. This term is not of course pathologically correct, since the tissues of the retina do not undergo any inflammatory changes, but it has a convenient clinical significance and is therefore retained for that reason. Histologically, the change consists in the formation of hyaline nodules in the outer molecular layer of the retina. These nodules are visible with the ophthalmoscope as bright, white dots, seldom larger in diameter than one of the main veins. They are usually grouped at the posterior pole of the eye, and may occasionally form a star or a fan-shaped figure round the macula. Foster Moore[12] has noted that, though they are very slow to undergo change, the individual spots may in the course of time disappear, but that others develop and so the general appearance of the fundus remains the same. There are also, of course, hæmorrhages.

Foster Moore has undoubtedly performed a very useful piece of work in differentiating this type of retinitis from the so-called albuminuric or renal variety. The importance lies in the prognosis with regard to life because, although it is unusual for patients with renal retinitis to survive for longer than two years after the discovery of the lesion, patients with arterio-sclerotic retinitis may live quite a number of years, even though there may be some albumin in the urine from associated sclerosis of the renal vessels.

Albuminuric Retinitis

It seems appropriate now to say something about that vexed question of renal or albuminuric retinitis. First of all, what are the facts, so far as we know them? I hope you will not consider it old-fashioned if I refer to the varieties of nephritis as acute, chronic parenchymatous, and chronic interstitial. If we accept this classification, the last type of kidney disease is that in which retinitis is far and away the most common, while it is seen only rarely in association with the chronic parenchymatous form, and hardly ever in acute nephritis. Another fact in connexion with renal retinitis is that it is practically always associated with a raised blood pressure. Thus Foster Moore,[12] in examining 68 cases of nephritis, found that in 23 of them who had retinitis the average systolic blood pressure was 211 mm. Hg, and that in only six cases was it less than 200. Of the remaining 45 cases, who had no retinitis, the average systolic blood pressure was 150 mm. Hg, and in nine only did it exceed 160 mm. Hg.

The main ophthalmoscopic features are the soft-edged cotton-wool patches, the development of a star figure at the macula, the presence of hæmorrhages, and the occurrence sometimes of papillœdema. How are we to explain these features? It seems to me that we have three separate factors. In the first place, many cases of chronic renal disease suffer from increased intracranial pressure, and it is just those cases showing signs of this (excruciating headaches, transitory amaurosis, Cheyne-Stokes breathing, &c.) which develop œdema of the optic disc, the mechanism being presumably the same as that which accounts for the condition occurring in cerebral tumours: Larson,[13] for example, in 1924 reported 11 cases of renal retinitis, with an average spinal fluid pressure of 347 mm., in all of which there was marked papillœdema. Once we admit production of papillœdema from the mechanical effects of increased intracranial pressure, we have an explanation for the production of hæmorrhages and soft white areas in the region of the disc and for blurring and swelling of the disc itself.

The next factor is œdema of the retina, which in all probability is responsible for the star figure at the macula. In cases of cerebral tumour where there is a rapid rise of intracranial pressure it is not uncommon for a fan figure to develop, consisting of lines radiating from the macula towards the disc. In these cases it is the portion of retina between the disc and the macula which is œdematous, and it is here, therefore, that the radiating lines are seen. I have observed a similar condition in a case of thrombosis of the superior temporal vein where a fan figure formed, with the lines pointing upwards towards the area of retina rendered œdematous by blocking of the vein. In renal retinitis, however, the area of retina all round the macula is œdematous, and so the lines point out in all directions, making a complete star figure.

The third factor is probably the presence of some hypothetical toxic substance in the blood, which poisons the retina and gives rise to the formation of the cotton-wool patches. It is of course more than likely that the same substance is responsible for the œdema, since it is probably endotheliotoxic and, by its action on the capillary walls, renders them pervious to fluid and, in places, to blood also, thus accounting for the hæmorrhages. The pros and cons of this toxic theory have been hotly debated, and each side seems at first sight to have an almost unanswerable argument. Those in favour of the toxic theory point out that typical examples of renal retinitis may occur in the toxæmias of pregnancy where there is no associated general arterio-sclerosis, while those who regard arterio-sclerosis as the determining factor point to the absence of retinal changes in cases of profound renal insufficiency such as occurs in urinary obstructions. The answer to the first statement is that high blood pressure is prominently associated with pregnancy toxæmia, as is also œdema of organs other than the eye, and the answer to the second statement is that renal retinitis takes some time to develop and a patient with urinary obstruction is scarcely likely to live long enough for this to occur, at any rate if the obstruction is sufficient to cause retention of products of metabolism.

There remains, however, the factor of vascular disease to be accounted for. According to many authors, this is a sine qua non of renal retinitis. I have already quoted Foster Moore's figures which showed that in a series of cases of nephritis those which developed retinitis had a considerably higher blood pressure. I have also mentioned Friedenwald's statement to the effect that one particular type of retinal arterio-sclerosis, namely, the arteriolar variety, is invariably followed by renal retinitis and that, in addition, all cases of renal retinitis which he examined showed arteriolar changes, both by ophthalmoscopic and by histological examination. It does not seem to me, however, that such findings justify the assumption that sclerosis of the retinal arterioles is the cause of the retinitis, any more than because two certain things happen together one is necessarily the cause of the other. I would rather try to trace the matter further back and say that both have a common cause, and the line of argument would seem to be as follows: when the agent, whatever it is, that causes arterio-sclerosis affects the larger vessels, no retinitis of the albuminuric type is seen. The nearer the affection comes to the capillaries, however, the more likely are retinal changes. Now the arterioles in the region of the macula represent the smallest vessels which are visible in detail with the ophthalmoscope. Is it not possible, therefore, that we are dealing primarily with a toxic substance which has an elective affinity for the smaller arterioles, bringing about their sclerosis, and for the capillaries altering the permeability of their walls and so permitting the transudation of fluid and the occurrence of retinal œdema? If retinal œdema occurs, something of the same kind happens in the brain, bringing about a rise of intracranial pressure and papillœdema with its associated changes.

Diabetic Retinitis

Diabetic retinitis is an interesting condition which has excited a considerable amount of discussion, because it does not owe its origin to diabetes alone. Age plays its part, and retinitis is not seen in diabetics under middle life, although in such people diabetes may often assume its most malignant form. In spite of this, however, diabetic retinitis often assumes a form sufficiently characteristic to allow of ophthalmoscopic diagnosis. The hæmorrhages are for the most part small and circular, owing to their situation in the deeper layers of the retina. There are no cotton-wool patches, and the white areas present have a soapy appearance with clean-cut edges. Sometimes they are arranged in a circle round the macula. Finally, there is no retinal œdema to speak of and there is no star figure. The latter is sometimes seen but, even if it appears, it has not the regular pattern characteristic of the renal type of disease.

The causation is still a matter for discussion. The fact that diabetic retinitis does not occur in the young suggests that its development may be associated with vascular disease, and this is so in a fair proportion of cases, but not by any means in all. The same is true of albuminuria, which may or may not be present. It appears, therefore, that arterio-sclerosis and renal disease are concomitant, possibly contributory, but not causative of this form of retinitis. Another interesting feature of the condition is that it may occur in those who have had diabetes and are now sugar-fr or, to put it another way, that treatment directe towards curing the diabetes does not necessarily sto the retinitis. The essential lesion in the disease h seemed to me to be the recurrence of the deep-seate retinal hæmorrhages. In the hope of preventing thes I have at times tried empirically the administratio of calcium, sometimes with parathyroid, partic larly as it seemed possible that the white areas migl represent the results of organisation of the hæmo rhages. I was very interested, therefore, to rea Cammidge's paper[14] on this subject. He made detailed examination of the blood in 16 cases diabetic retinitis, and the most constant finding, apa from hyperglycæmia, was calcium deficiency, 13 the cases giving figures which were distinctly path logical. The three cases with normal calcium present an ophthalmoscopic picture more in keeping wi renal than diabetic retinitis.

The calcium deficiency may arise in different way one being depletion of the alkali reserve of the bod consequent on acidosis. Another way is throug deposition of calcium in the vessel walls. Such calc fication is easily diagnosed by X rays, and is foun more commonly and in a more advanced stage i diabetics than in those not suffering from the diseas The changes found resemble those produced expe mentally in rabbits by prolonged feeding wi cholesterol, so it is thought that persistent lipæmia the determining factor.

Retinitis and cataract do not exhaust the poss bilities in diabetes; the optic nerve and the extra-ocul muscles may become affected. There is also a form iritis in which the pigment layer is very easily detach from the iris. I have seen complete optic atrop develop, but a commoner condition is a form of retr bulbar neuritis with a central scotoma, which ma clear up or go on to atrophy. A milder form of t same sort of thing is the increased sensitiveness whi many diabetics show to the toxic effect of tobacco.

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BOLTON ROYAL INFIRMARY.—The King has give his assent to the title of the Bolton Infirmary being chang to the Bolton Royal Infirmary.

KING GEORGE HOSPITAL, ILFORD: NEW WARD.- A satisfactory year's working is recorded in the annu report, and the extended facilities afforded by the openi of the new buildings by the King last year have be used to the utmost. The number of in-patients resident 1931 was 97·56, each patient's stay averaging nearly thr weeks. The average cost per bed was £3 5s. 2d. A ve important feature of the year's work was the success of t contributory scheme, which, although still in its infanc looks as though it may go far towards solving the proble of maintenance.

For the second time within a few days a new ward h been opened at this hospital. It contains 27 beds, and h been provided, at a cost of £10,000, by Captain Erskin Bolst, M.P. for Blackpool. It was formally opened b Lady Hamilton, wife of Sir George Hamilton, M.P. fo Ilford.

THE ASBESTOSIS BODY

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DURING the past two or three years observations on the asbestosis body have been published with such frequency that it is very difficult to keep track of them all. In this paper I have endeavoured to bring together, as far as possible, all the work from different sources and at the same time to add such facts as have come under my personal observation.

HISTORICAL INTRODUCTION

In 1914 Fahr [1] demonstrated to the Medical Society of Hamburg specimens and photomicrographs of the lungs from a case of pneumonoconiosis occurring in an asbestos worker. He mentioned the presence in the lung of a large number of crystals and stated that similar structures had been seen in 1906 by Marchand and Riesel, who had speculated as to whether they were due to the inhalation of asbestos dust or were a hæmoglobin derivative. Unfortunately no pictures are given in the brief report of Fahr's communication and I have been unable to find any further record of Marchand and Riesel's observations, but it is probable that what both Marchand and Riesel and Fahr saw was the asbestosis body. However, these descriptions attracted little attention at the time and seem to have been forgotten.

The next indication that the fibrosis induced by asbestos revealed anything unusual came in 1927 when Cooke and Hill [2] and Stuart McDonald [3] described certain curious bodies found in the lungs of an asbestos worker who had died in 1924. Cooke [4] had previously recorded the case in 1924 but had not at that time mentioned these curious bodies. In the account published in 1927 Cooke and Hill gave the following description of them:

> "They are yellowish-brown in colour and do not stain with the usual stains, but give the Prussian blue reaction. There is a uniformity in appearance, group distribution, and fructating heads that make one think of a fungus. The hyphæ are verruciform and discoid, and definite spores are seen. Many cases are recorded of infections of aspergillus and penicillium occurring with tuberculosis."

They submitted the sections of the lungs containing these bodies to various workers. Some workers considered them to be radiolaria spicules, others diatomaceæ, others "casts of small cavities," others "particles of asbestos fibre that have become coated with colloidal matter." Others again believed these structures to be fungoid bodies and on morphological grounds suggested them to be aspergilli, penicillia, or hyphomycetes with septate hyphæ. The authors quoted in support of this last view an account given by Scott [5] of a new hyphomycete found in batrachians, *Monilia batrachia*.

Later in the same year Stuart McDonald, to whom post-mortem material had been submitted from the same case, gave a fuller description of the bodies. He described them as foreign bodies of a distinct yellowish-brown colour suggesting blood pigment, some elongated, some rounded and homogeneous, some annular and appearing to consist of a closely set series of rounded discoid bodies, others again simulating sporangia of a hyphomycete or even minute crustaceans. (Beintker [5a] has likened various forms to sea-lilies, roots, boats, and dumb-bells.) But closer examination did not support the idea that they were either vegetable or animal in origin. On this point Stuart McDonald was quite definite. He also quoted another case of an asbestos worker in whose lungs he had found similar bodies.

The first illustrations of the bodies were given by Cooke and Hill in their original description. Subsequently they were depicted by Simson [6] in autopsies of South African cases. His paper also included a microphotograph of the bodies produced experimentally in the lung of the guinea-pig by Mavrogodato, the first occasion on which the bodies had been produced experimentally. At this stage Stewart and Haddow [7] made the suggestion that the bodies should be called "asbestosis bodies," a term which has now been generally adopted.

THE MORPHOLOGY OF THE BODIES

The diversity in shape makes it almost impossible to write an adequate description which will fit all forms. The following summary comprises, however, the chief points:—

1. Marked variation in length (24–60 μ) and breadth (12–24 μ). Gardner and Cummings record them as long as 250 μ in experimental animals. The short forms are sometimes seen within phagocytes.
2. Golden yellow colour. Gardner and Cummings have pointed out the resemblance of this colour to the hæmosiderin deposits found in areas of tissue in which hæmorrhage has occurred.
3. Homogeneous structure when viewed by ordinary transmitted light.
4. By cutting down the light a suggestion of a central fibre can often be seen. This fibre may also sometimes be seen projecting beyond the body.
5. No differentiation with polarised light (Cooke and Stuart McDonald).
6. Tendency to be arranged in irregular clumps and clusters.
7. Very early forms unsegmented ("sausage shaped").
8. Later forms crenated, segmented, or resembling a series of oval discs, or beads strung together in a necklace form. Sometimes, later, a short length of fibre is seen between the segments.
9. Bulbous or pointed extremities (or one bulbous and one pointed suggesting "heads and tails"). Simson and Strachan have noted sharply angled forms suggesting incipient fracture, and believe that the tapering tail forms may be the broken ends of this fracture.
10. Generally quite straight, occasionally curved, very rarely S-shaped. When examined in a wet preparation slight pressure on the cover slip will sometimes cause them to bend owing to the elasticity of the central fibre. This liability to bend under stress and strain may explain the curved forms often seen in sections of tissue, as suggested by Gardner and Cummings.
11. Forms seen "end-on" look like knobs or door-handles. Small secondary knobs and bosses sometimes seen thereon.

METHODS OF DEMONSTRATION

1. *Sputum*.—Stewart and Haddow first found the bodies in sputum by digesting the sputum with an equal quantity of undiluted antiformin, centrifuging, washing the deposit, and examining a dried film. Or the deposit can be examined wet like a urine. Occasionally the bodies can be found in a direct film from sputum without centrifugation.

2. *Lung*.—Stewart [8] also found asbestosis bodies in direct films from lung juice at the time of the post-mortem examination; Stewart and Haddow demonstrated them in tissue juice obtained by lung puncture during life. In sections they stand out well unstained against the stained background of hæmatoxylin and eosin, but they are really best seen in an unstained section. Beintker recommends decolorising with chlorine, which enables the central fibre to be seen, but takes out much if not all of the golden yellow colour.

Fæces.—There is often no sputum in cases of pulmonary asbestosis until late in the disease. In such cases it is possible that sputum is produced but swallowed, as is not infrequently the case in pulmonary tuberculosis. On one occasion I found [9] asbestosis bodies in the fæces by emulsifying with formol-saline, centrifuging and examining the deposit. The bodies, though clearly recognisable, were scanty in number and not so deeply coloured with yellow pigment as usual, as though partial digestion had taken place.

STAINING

The bodies do not stain with the ordinary aniline dyes used in routine laboratory work, but according to Gardner and Cummings Wright's blood stain gives them "a greenish cast." They will also retain neutral red slightly, but these partial reactions cannot be called true staining reactions. Cooke and Hill and Stuart McDonald, in their original descriptions, noted that the bodies could be stained by means of the Prussian blue reaction. For ordinary purposes of identification staining is unnecessary but coloration of the bodies is sometimes helpful, particularly in sputum where they are apt to be scanty and to be obscured by cellular debris. Staining is also valuable for obtaining more detail of the outline of the subsidiary bosses of the body and for detecting the presence of the central fibre. It is also distinctly helpful in making photomicrographs. In the case of sputum I have used the following technique[10]:—

> After digestion of the sputum with equal quantities of concentrated antiformin and centrifugation, the antiformin is pipetted off, and the deposit covered with a small quantity of a 5 per cent. solution of ammonium sulphide. The asbestosis bodies are then coloured black. This colour can be removed with hydrochloric acid.

In the case of sections the following technique has been found useful:—

> After removing the paraffin wax with xylol and alcohol in the usual way, the section is washed with water and then flooded with ammonium sulphide, which is allowed to remain for several minutes. The section is next washed and counter-stained with an aqueous solution of neutral red, dehydrated, and mounted in balsam. This method of staining also shows the presence of a large amount of iron in the sections. Unfortunately the black colour is slowly removed by the mounting fluid, and the sections will only keep for a few weeks.

Hæmatoxylin, which also has an affinity for iron, can be made to colour asbestosis bodies, but it is more a deposit of stain that a true staining reaction. The technique is as follows:—

> After digestion of the sputum with equal quantities of concentrated antiformin and centrifugation, the antiformin is pipetted off and replaced by a 5 per cent. solution of Ehrlich's hæmatoxylin. Blueing of the hæmatoxylin immediately takes place owing to the remains of the alkaline antiformin. The mixture is well shaken and allowed to stand for half to one hour, and then centrifuged again and the deposit mounted as a wet preparation. By this means the asbestosis bodies become a dark brown to black colour, according to the length of time they have been exposed to the hæmatoxylin.

Although these hæmatoxylin-coloured bodies give the impression of having the hæmatoxylin deposited on them rather than having actually taken up the stain, after washing overnight they still retain sufficient stain to give a dark brown effect with transmitted light.

THE FORMATION OF THE ASBESTOSIS BODY

No asbestosis bodies have been found in crude asbestos or in asbestos dust, and it seems practically certain that they are only produced when the fibres gain access to living tissues and remain there for a considerable period of time. The asbestos fibre which forms the central core of the bodies was identified by me[11] by the following experiment:—

> A wet preparation of the bodies was placed on the stage of the dark-ground illumination microscope, and the position of a readily recognisable group of these bodies noted. Concentrated sulphuric acid was then run very gently under the cover slip, the bodies being kept under observation all the time. They began slowly to dissolve, and in the middle of the structure of each appeared a typical asbestos fibre. At the end of half an hour practically all the material of which the bodies were composed had disappeared, leaving only faint ghost-like outlines with refractile asbestos fibres within them.

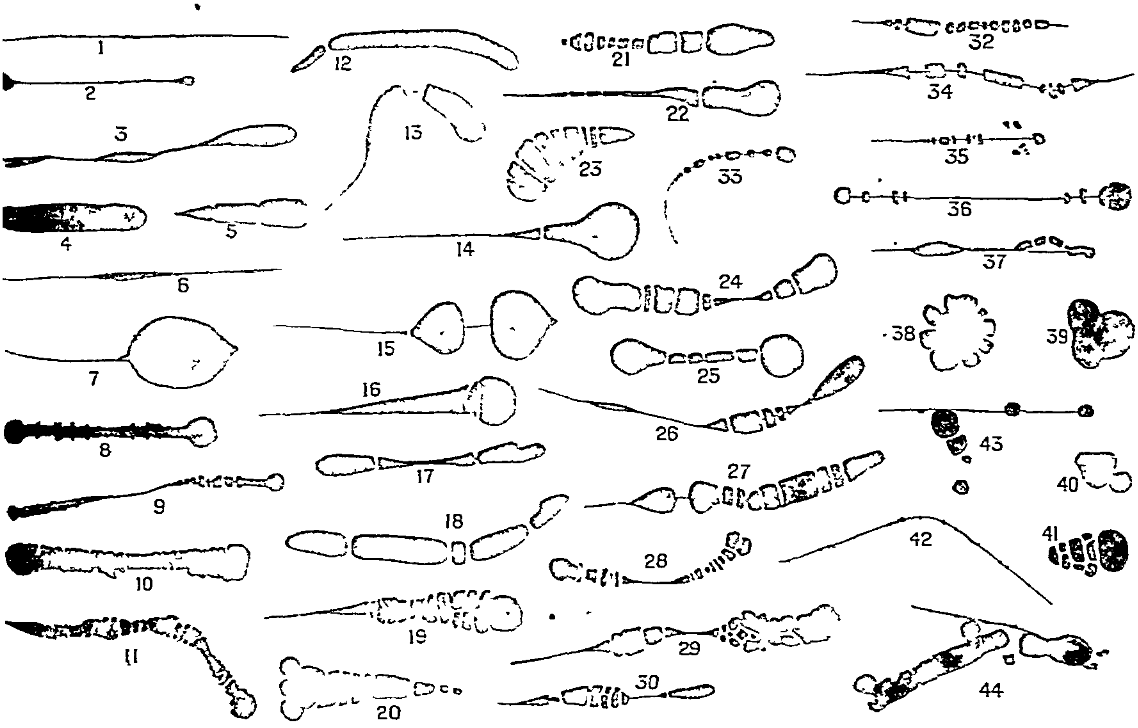
Gardner and Cummings[12] next showed that the golden yellow material which covers the fibre contained iron. Iron-free asbestos fibres were impregnated with an iron salt by heating to dryness in a dilute ferric chloride solution and igniting. The fibres were then placed in a solution of sodium silicate. The iron salt adhering to the fibres reacted rapidly with the silicate producing a curiously shaped golden-yellow structure which bore some resemblance to the asbestosis body. They further showed that in lung sections the earliest forms encountered consisted of iron containing, sheath-like or nodular swellings along the sides or at the ends of a fibre. From these points further extensions occurred until in some cases the whole filament acquired a uniform coating which was brittle and finally began to crack thus separating the body into segments. Beintker also suggests that a silicate enters into the formation of the body.

Simson and Strachan,[13] in reporting asbestosis bodies in the sputum of 50 workers in an asbestos mill in South Africa, considered from a study of the intracellular asbestosis bodies in these cases that they were formed by the deposition on the asbestos fibre of an iron-containing substance elaborated by the cell. They state that in carefully prepared direct films of sputum the bodies are always intracellular and that the fibre becomes coated with the characteristic pale greenish-yellow or golden-yellow substance which gives the Prussian blue reaction. This coating may be uniform except at the extremities where there is a bulbous enlargement. After the deposited material has increased segmentation appears, becomes deeper and finally fracture of the fibre takes place. It is, in their view, this fractured end which gives the appearance of the crustacean-like tail sometimes noted. This tail may become bulbous again. The authors believe that it is the alveolar phagocyte and not merely the body fluid which is the source of the material which goes to form the asbestosis body.

From a study of a large number of different forms of asbestosis bodies, I have endeavoured to build up a complete picture of formation from the original inhaled fibre.[14] Figs. 1 to 3 show deposition of some material on the fibres to a varying extent. When completely covered the body thus formed has a sausage-like form without any differentiation from end to end (Fig. 4). These thickened forms next begin to show definite fissures (Figs. 5 to 7) giving the appearance of incomplete segmentation at irregular intervals. In Fig. 8 this segmentation has advanced a stage further, the fissures now extending almost to the middle line of the body at irregular intervals along its length. These fissures also give the appearance of a head at the ends (Figs. 9 and 10). As they become deeper and more numerous a completely but irregularly segmented body results (Fig. 11). When the fissures reach the straight central fibre they appear as (*a*) a small number of long segment as in Figs. 12 to 18, or (*b*) a large number of short segments as in Figs. 19 to 34. These short segments may be regular in size and shape resembling beads on a necklace (Figs. 32 to 34) or the segmentation may be complete at one end of the body and incomplete at the other.

In this final stage some of the segments break away (or even small portions of segments), leaving bare lengths of fibre between the remaining segments (Figs. 35 to 37). Very occasionally these broken gments can be actually seen in the process of eaking away. This is well shown in Figs. 35 and 37. dies viewed end-on or obliquely are seen in Figs. 38 41.

The asbestosis body would appear, therefore, to formed from the original fibre by a process of) deposition of some material around the fibre as to thicken it; (2) fissure or cracking of this terial giving rise to the appearance of segments; d (3) fragmentation or the separating off from the bestosis body of fractured portions of the deposited terial. Timmermans[15] has recently suggested that e shape of the asbestosis body is conditioned to a rge extent by the surrounding tissue, handle-shaped rms being produced in places where there is no ovement, and carrot-like forms where the tissue id is in motion. This explanation would seem to ve less force when the asbestosis bodies are oduced experimentally in subcutaneous tissue.



Various forms of asbestosis body.

THE COMPOSITION OF THE BODIES

Of the various original speculations as to the mposition of these bodies that of asbestos fibres ated with colloidal matter has been most nearly rrect. The central fibre having been demonstrated o questions have to be answered. What does this lden yellow material consist of? Where does it me from? Cooke at one stage suggested that some the coccal and spore forms of the bodies might formed by bacterial action. Subsequently, how-er, in collaboration with Hill,[16] he came to the nclusion that the asbestos fibre became enveloped minute extravasations of whole blood or serous udate. When these workers submitted the bodies film preparations to X ray examination with the agg technique they came to the conclusion that e "greater proportion of the composition of these dies was of non-mineral origin." Gardner and ummings also failed to obtain X ray shadows with the Bragg technique, but did not draw the same conclusion. Schuster[17] concludes that asbestosis bodies may be found with or without inflammation, that there is no causal relationship between the two phenomena, and that whatever juices take part in the construction of the bodies they are produced during normal metabolism. Simson and Strachan incline to the view that the coating of the fibre is derived from the phagocyte.

The early observations of Stuart McDonald had shown that the asbestosis body took on the blue colouration of the Prussian blue reaction, thereby indicating that iron entered into its composition. The work of Gardner and Cummings, of Simson and Strachan, and the present writer, referred to above, confirmed this fact. There is evidence, however, that iron is probably not the sole constituent of the golden-yellow coating material. With regard to the second question, the source of this iron fraction of the body may conceivably be either the asbestos itself or the body tissues. Three varieties of asbestos are used in industrial processes (Merewether[18])—chrysotile, crocidolite, and amosite. The first named, which forms the largest part of the supply at the present time, contains 0·7 to 4·4 per cent. iron. Crocidolite and amosite, limited to the use of certain factories connected with the South African trade, contain 35·5 to 37·4 per cent. and 34 to 44 per cent. respectively. This iron probably chiefly occurs in the form of silicate of iron. As far as we know all asbestosis bodies, whatever the origin of the causative asbestos, give an iron reaction. With regard to the tissue origin, iron in body tissues is chiefly derived from oxyhæmoglobin, though there are also minute traces of it in protoplasm. The amount of iron in oxyhæmoglobin is practically constant (Starling[19])—viz., 0·336 per cent.

With a view to the determination of this question Gardner and Cummings prepared a mixture of equal parts of very finely divided asbestos fibre and fine whole asbestos dust, divided the mixture into two parts, removed the iron from one part by digestion with hydrochloric acid, keeping the other part as a control, and injected saline suspensions of each part subcutaneously into guinea-pigs. The iron-free suspension was injected into the left groin of the animal and the control into the right. At the end of 60 days animals showed fibres but no bodies on the right side, but no injected material at all on the left. The equivocal results of this experiment was, as the authors suggest, probably due to lack of sufficient time allowed for the development of the asbestosis bodies.

Meanwhile, unaware of the above experiment, I had carried out a test on similar lines with a more successful result. It had previously been shown[20] that in spite of the high resisting powers of asbestos a certain loss of weight occurs with strong acids. A small portion of blue asbestos was therefore boiled in pure concentrated hydrochloric acid with repeated changes of acid until the final acid gave no iron reaction with potassium ferrocyanide. The asbestos was then suspended in sterile water rendered slightly alkaline and injected into the inguinal region of six guinea-pigs. The amount of asbestos used was very small, and in four of the animals it could not be discovered at autopsy. In one animal, however, killed nine months after injection, a small nodule containing asbestos was found in the thigh muscles. On histological examination of this nodule, which consisted chiefly of connective tissue, a number of small but quite typical asbestosis bodies were found. These bodies gave an iron reaction with ammonium sulphide and with the Prussian blue test. This experiment suggests that the iron of the asbestosis body is derived from the body tissues.

EFFECT OF FERMENTS ON ASBESTOSIS BODIES

As mentioned above, asbestosis bodies found in the fæces in a case of pulmonary asbestosis showed some evidence of digestion. The following experiments were performed to test the effects of other ferments :—

Artificial gastric juice.—Sputum containing asbestosis bodies was digested for 24 hours with an equal quantity of artificial gastric juice with and without previous treatment with antiformin. The centrifuged deposit showed typical asbestosis bodies, but in each case the pigment in them appeared to be slightly less. They gave an iron reaction, however.

Trypsin.—Cooke and Hill record that the bodies resist the digestive action of trypsin when portions of lung are placed in this material. I found that when sputum was digested with trypsin for one week the bodies were destroyed, but in lung tissue some survived.

Autolysis.—Sputum containing asbestosis bodies was allowed to remain in the incubator and autolyse for 14 days. At the end of the first week asbestosis bodies were still present ; by the end of the fortnight only a few very imperfect bodies were found though many asbestos fibres were seen.

Caseation.—In a group of 12 guinea-pigs infected with a feebly virulent strain of *B. tuberculosis* after two years' exposure to asbestos dust, Gardner and Cummings noted that the development of caseation in an area containing asbestosis bodies led ultimately to the destruction of the bodies. They lost their characteristic golden-yellow colour, failed to give a Prussian blue reaction, and were apparently so completely disintegrated that not even a supporting fibre remained. Polarised light also failed to reveal refractile elements. The authors make the suggestion that the change in hydrogen-ion concentration incident to caseation may favour solution of the foreign bodies.

In the lungs of human cases Wood and Gloyne[21] found asbestos fibres and asbestosis bodies lying side by side in caseous areas, but it was impossible to determine whether the fibres were the remains of dissolved asbestosis bodies. The bodies still gave iron reactions.

According to Wells, De Witt, and Long[22] two ferments probably play a part in the caseation of tuberculosis : (1) an autolytic enzyme causing cell coagulation, &c., in the early stages ; and (2) a proteolytic ferment which is responsible for the subsequent breaking down, and is induced by secondary infection and leucocytic invasion. If the caseation were to take place in an area of tissue already stocked with asbestosis bodies the autolytic ferment might conceivably have some destructive effect on the asbestosis body. Again, if asbestosis bodies were to enter an area already caseous—an unlikely contingency, since asbestosis bodies have little power to migrate—they might conceivably act as a secondary infection and induce proteolytic action resulting in their destruction. Whether the so-called autolytic ferment of caseation or the proteolytic ferment o secondary infection be responsible, the result is probably, at the long last, the same—viz., destruction of the asbestosis body.

EFFECT OF HEAT ON ASBESTOSIS BODIES

In one experiment asbestosis bodies resisted boiling for two hours, whilst the water showed no trace o iron. In another asbestosis bodies resisted boiling for four hours. Timmermans also found that they resisted dry heat.

EFFECT OF ACIDS AND ALKALIS

The effect of acids on the asbestosis bodies varies a good deal. In sections I found that they resisted decalcifying fluid which contained 7½ per cent. o nitric acid, for several weeks. Concentrated sulphuric acid leaves only a mere semblance of a *ghost-like* body with a central fibre. Generally this dissolving action takes place within a few minutes, but it may be delayed for several hours. It is possible that thi is due to some of the bodies being large, harder, and more resistant than others, but it seems more likely that inasmuch as the bodies are always examined in an impure medium such as sputum or lung tissue or fluid, some mechanical factor prevents the sulphuric acid reaching quickly certain individual bodies Hydrochloric acid has the effect of bleaching the bodies ; the yellow colour is taken out almos immediately leaving a colourless skeleton of the body, suggestive of a minute hyaline urinary cast Sometimes the body becomes swollen and the segmentation is lost ; at others the segments seem to remain intact. The effect of hydrochloric acid is interesting in that the golden-yellow colour is discharged but the ghost-like structure of the body remains. The inference here would appear to be that the body consists of at least two portions surrounding the fibre—viz., a resistant materia which forms a framework and gives the body the characteristic shape, and a golden-yellow pigment which is readily bleached. Nitric acid has less effect ; the yellow colour is only to a small extent discharged and even when the bodies are left exposed to the acid for 24 hours in the cold they still retain a light yellow colour and the segments are intact. Glacial acetic acid appears to have no effect.

Cooke states that the bodies are soluble in strong kalis. I have noted, however, that they remain tact with practically no discharge of the golden-llow colour when left in 20 per cent. caustic soda r 24 hours.

ATTEMPTS TO PRODUCE THE BODIES IN VITRO

Attempts were made to produce asbestosis bodies vitro by exposing sterilised ground-up asbestos res for a whole year both at room and at body nperature to the following substances in the hope at the fibres might be made to swell up or take on a posit which would simulate the asbestosis body: concentrated sulphuric acid; (2) concentrated ric acid; (3) ferric chloride; (4) sodium silicate; trypsin; (6) bile; (7) calcium lactate (1 per cent. ution); (8) saturated calcium chloride; (9) 1/1000 loidal calcium—whole blood and blood-serum re also tried for rather shorter periods. The ric acid specimens showed a tendency to oblique mentation, corkscrew and granular forms such as seen in asbestos which has been boiled with ong hydrochloric acid. In the three calcium eparations, both at room and body temperature, the res showed a definite feathery thickening, presum-ly from a deposit of calcium salts on them, but ere was no real resemblance to asbestosis bodies. effects were noted in any of the other substances.

Gardner and Cummings have succeeded in preparing dies superficially resembling asbestosis bodies by following method: iron free asbestos fibres were pregnated with an iron salt by heating to dryness a dilute ferric chloride solution and igniting. e fibres were then placed in sodium silicate solution. e iron salt adhering to the fibres reacted rapidly h the silicate, producing a curiously shaped den-yellow structure which resembled the asbestosis dy.

WHAT INFERENCE CAN BE DRAWN FROM THE PRESENCE OF THE ASBESTOSIS BODY?

From the presence of the asbestosis body in the tum certain deductions can be made.

(1) Since these typical bodies have not been found any other disease, their presence is an indication of posure to asbestos dust.

(2) The fact that the bodies have not been found asbestos dust implies that their formation is the ult of some tissue reaction in the body—probably colloidal reaction in which the iron plays a part.

(3) Asbestosis bodies have been found in the guinea- by Mavrogordato four months after exposure, Stewart three to five months after exposure, Gardner and Cummings 70 days after exposure, d by the present writer six months after. Simson recorded the bodies in a human lung with a tory of only two months' exposure. The human ng does not of course constitute quite such a clear- test, since the exposures are not so carefully trolled. It may be assumed, however, that the sence of asbestosis bodies in the sputum means at asbestos fibres have been present in the lung for ny weeks at least.

(4) Lastly, can it be deduced from the presence of asbestosis body in the sputum that fibrosis cessarily exists in the lung? Simson and Strachan ve already answered this question in the negative. e presence of the asbestosis body implies a tissue ction to the fibre, but it does not necessarily follow at this reaction is accompanied by fibrosis. On one casion I found fine connective tissue fibres in sections a guinea-pig as early as 12 days after subcutaneous inoculation of asbestos fibres, but the amount was very minute. A heavy dose of fibres would be needed —and even then years might elapse—before the fibrosis was sufficient to be detected by physical signs or radiogram or to produce dyspnœa. It would be unsafe, therefore, to accept the presence of the asbestosis body as undeniable evidence of fibrosis; all we can say at present is that the asbestosis body is an expression of tissue reaction of the nature of a benign irritant, and that fibrosis of an appreciable extent may or may not be a part of that tissue reaction.

PRODUCTION OF THE ASBESTOSIS BODY IN ANIMALS

As stated above the production of the asbestosis body in the lungs of the guinea-pig was achieved by Mavrogordato and others quite early in the research. Gardner and Cummings noted that the bodies were less easily produced in the subcutaneous tissues of the animal. (In passing it may be noted as a fact of possible significance that the bodies have not yet been described in the skin warts to which the workers are liable. I have examined without success sections of a wart which was known to have been present for many weeks, and have failed also to find them in the skin of a guinea-pig seven months after the asbestos fibres had been introduced into the cutaneous tissues. Dewirtz[23] also does not make any mention of asbestosis bodies in sections of warts in Moscow factory workers.)

Gardner and Cummings also record that the lung of the rabbit apparently offers a much less favourable environment for the production of the bodies than does the lung of man and of the guinea-pig. Nothing faintly resembling the asbestosis body was found, they state, in the rabbit until the dust exposure had been continued for a period of 11 months. These authors furthermore found the white rat very refractory. Only two asbestosis bodies were found, though they consider that their negative result may have to some extent been vitiated by the widespread incidence of natural chronic pulmonary infections in their animals. After careful search I found only one small but typical body in the lung of a grey rat caught on an asbestos factory premises, though there were large numbers of fibres present. The length of exposure, however, cannot in this case be verified.

Schuster examined the lungs of a rough-haired terrier which had been kept on factory premises for the purpose of ratting. The animal was 10 years' old and had been living in the factory nearly all his life, with access to all parts of the building. He had suffered for two years from cough and dyspnœa and for six months from progressive wasting. No trace of asbestosis bodies was found in several sections and staining for the Prussian blue reaction gave no additional information, although the histology of the lung was typical.

Obviously much work is needed before this side of the problem can be elucidated, but it seems clear that not all animals will produce the asbestosis body with equal facility.

I am indebted to Miss P. E. Double for the drawings of the asbestosis bodies.

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(*Continued at foot of next page.*)

RESULTS OF THE SO-CALLED
TONSILS AND ADENOIDS OPERATION

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Some months ago I stated at the Otological Section of the Royal Society of Medicine that at the present rate of operating a fourth of our population were, during the school period, being deprived of tonsils and post-nasal adenoids.

I was surprised myself at the above statement and would fain have found myself mistaken, but as I found that 6000 out of a yearly admission of 22,000 children were being operated on at various centres in Glasgow, there was no escape from the conclusion. I was forced to ask myself if this operation was necessary; did the ends attained justify the disturbance to the child and the cost to the community? In other words, what are the end-results of the so-called T. and A. operation? The thesis of this short paper is that the results justify the disturbance to the child and the cost to the community. But I contend that many of us remove tonsils too often or too soon and that we do not remove post-nasal adenoids often enough or early enough. I contend that we have become slaves to a phrase, that we should speak of T. and A. operations but separate them in thinking and in practice and speak of the operation on the tonsils and that on the post-nasal adenoids. Of course they belong to the same anatomical ring but that ring does not become diseased round its whole circuit or arc in every case. Even when the whole ring becomes involved, the adenoids infection usually precedes that of the tonsils, though sometimes of course the order of invasion may be reversed.

My conclusions are based on the work done during the last 15 years at the instance of two education authorities, that of Glasgow and that of the county of Dunbarton, representative on the one hand of typical city life and on the other of mainly country life. Dr. Napier Grant is my colleague in the city work. I am the only operator for the county authority. About 23,000 operations have been done —12,000 in the city and 11,000 in the county. No death has occurred from bleeding either primary or secondary and none under an anæsthetic where t T. and A. operation alone was done. It is clear impossible to associate all these cases—in spite of t fact that careful records exist in every case—with recent or present-day examination or inspection. B the school records are the best in the country in o respect at least, for they cover nine or ten years of t life of the school child.

AN INQUIRY IN GLASGOW

Two methods of approach appealed to me:—

1. The statistical which I applied to recent Glasgow cas operated on during the past eight years.

2. Opinions derived from the observation of the medic men who see our patients for years before we operate a have to treat them for years after we lose sight of the And the general practitioners form the high court of judgme in a matter of this kind.

This second method I have used in the county cases

I was lucky to find that Dr. Arbuckle Brown, no chief medical officer of the Glasgow authority ha during the years 1924–25 examined 213 children, the average about six to nine months after operati and had tabulated the results. With the help of m assistant, Dr. Ian Thorburn, I undertook to exami a new batch who had been operated on 12 to 18 mont previously. This lot amounted to 280, so that we h carefully prepared end-results from a series of nea 500 cases. As the parent was in almost every ca present with the child when the examination of t child was made, a fairly correct and full account the results of operation was got.

In these Glasgow cases records were taken under t following headings: (1) throat and chest conditions i.e., sore-throats, recurring colds, bronchitis, hoar ness, &c.; (2) mouth-breathing or nasal obstructio (3) adenitis; (4) hearing—slight or marked deafne (5) aural discharge; (6) nasal discharge. The eff on the general health was also noted as reported by t parents.

I shall call Dr. Brown's cases Group I. and my o Group II. The general health figures in Group (280 cases) are as follows: 49 were much improv 193 were improved, and of the remaining 38 cases (change) 5 had good health before the operation. did not expect the operation to do everything—e. to cause the cessation of aural discharge in an case of scarlet fever, or to cure the Glasgow acce which is not one of the best in the country.

Comparing Dr. Brown's list (Group I.) with my o list (Group II.)—

Out of 280 cases all the symptoms disappeared	in 166 (59·3 %). (Dr. Brown, 84·0 %).
Out of 38 cases of chronic ear discharge cure resulted ..	in 22 (57·9 %). (Dr. Brown, 64·7 %
Out of 187 cases of mouth-breathing cure resulted	in 143 (76·5 %). (Dr. Brown, 93·2 %)
Out of 40 cases of deafness ..	23 were cured (57·5 % (Dr. Brown, 83·6 %).
Out of 53 cases of nasal discharge	29 were cured (54·7 % (Group II.).
Out of 161 throat and chest conditions—i.e., sore-throat, cough, &c.—assumed to be due to T. and A. disease	141 were cured (87·6
Out of 37 cases with enlarged glands	22 were cured (60 %).

My percentages in the above classes do not repres the total benefit to the child—e.g., some discha from the nose may remain although the deafness the mouth-breathing, the sore-throats, and the dam to the general health have disappeared.

(Continued from previous page.)

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Additional queries under Group II. brought out the llowing facts :—

Liability to exanthemata.—As a result of this operation it ould seem that children are rather less liable to those fections diseases where tonsillitis is usually found—e.g., arlet fever.

Liability to acute ear attacks.—An attack of acute ear ppuration occasionally follows the operation within e to two weeks. Otherwise the incidence of such attacks pears to be much lessened. One form of ear disease hich is almost always cured by the adenoids operation is *e recurring attacks of acute middle-ear discharge in young* ildren.

he chief divergence between Dr. Brown's figures and y own is that I found a larger number of scraps of nsils which had either been left or had returned. ch were nearly always towards the lower pole and ere probably due to mounding up of the lingual nsil. Out of 37 such cases only three had ever caused y symptoms. It seems likely that such imperfect perations—artistically imperfect—are too much amed. This is not an argument for tonsillotomy as gainst tonsillectomy; I favour the latter every time. ut if complete removal is essential how was it that 5–30 years ago we were able to say that tonsillotomy s perhaps the operation which in the whole of rgery was followed most commonly by good results?

QUESTIONNAIRE TO PRACTITIONERS.

In connexion with the county cases questions milar to the above were used. but this time were ddressed to the medical practitioners of the County f Dunbarton.

A. What do you consider to be the effect of the tonsil d adenoid operation: (1) on general health of the child; 2) on the local conditions in the throat, nose. and chest; 3) on hearing; (4) on the arrest of middle-ear discharge: 5) on the removal of mouth-breathing; (6) on the arrest of largement in. or the disappearance of, enlarged lymphatic ands; (7) on nasal discharge?

B. Do you know of any untoward results which follow e operation? (1) Are the children operated on more or s subject to infectious diseases than other children? 2) Do they have more or less liability to acute ear attacks an children on whom operation has not been performed?

Over 20 practitioners have made returns to the uestionnaire, and the answers may be summarised s follows :—

1. General health: nearly always good.
2. Effect on conditions in throat, nose. and chest: good.
3. Effect on hearing: good. especially if operation be ne early.
4. Aural discharge: usually good but often negative.
5. Mouth-breathing: nearly always good, especially if eration be done early.
6. Effect on enlarged glands in neck: nearly always od.
7. Nasal discharge: result often good but fails in many ses to give immediate results though later improvement ften takes place.
8. Infectious diseases after operation: less after operation. Not a single opinion to the contrary.)
9. Subsequent acute ear affections: the majority say ss liable, a few are in doubt. Only one opinion to the ontrary.

And these opinions are not given after six months or year of observation but on observations spread over everal years before and after the operation.

CONCLUSIONS AND COMMENTS

Such are the general conclusions voiced by those medical practitioners. But detailed remarks are orth quoting—e.g..

1. Adenoids should be removed early and the best results re attained in the removal of mouth-breathing. if the eration be followed by training out of the acquired habit.
2. Tonsils may often be left unless actually septic.
3. Middle-ear discharge due to other causes—e.g.. scarlet ver and measles—is not removed by the operation on the nsils or the post-nasal adenoids.
4. Nasal discharge is not always cured by *these operations*, but even in cases of apparent failure great improvement takes place in time. In this connexion it is well to remember that neither nasal discharge nor mouth-breathing will be fully relieved if there be a badly deflected nasal septum or greatly enlarged turbinals.

These conclusions suggest to me this thought, with which this paper began. We talk of the T. and A. operation: are we not the slaves of a phrase? Are we not dealing with two operations which are too often *performed together? Should they not often be dissociated?* The adenoids infection usually takes place earlier and the tonsils may escape altogether. Occasionally the tonsils suffer first and very occasionally alone. I therefore plead for the removal of adenoids as soon as nasal obstruction occurs and leaving the tonsils unless they are evidently diseased. Where there is no history of sore-throat and no enlarged glands I tend to leave the tonsils. I find this view of these cases results in my leaving the tonsils in 10–15 per cent. of the cases sent up for operation.

An argument in favour of this conservative practice *is that the removal of adenoids is followed by little* pain, whilst tonsillectomy is followed by a very sore-throat for two or three days.

Should the time come when we will be able to say in each case when a tonsil has ceased to be defensive and has become offensive a great help would accrue to the operator. In the meantime, with the diagnostic means at our command the highest skill is shown by the man who knows when not to operate.

One last remark. Does such work as we are doing represent the ultimate management of these cases? In my opinion certainly not. No one deplores more than I do the need for so many operations on young *children. In the fashion of the day one would look* towards dieting or vitamins for the solution. What the outlook will be 10 or 20 years hence I cannot say. In the meantime. let us do the best for the individual child as he comes before us.

REDUCTION OF FRACTURES UNDER LOCAL ANÆSTHESIA

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MUCH experimental work has already been done abroad on the reduction of fractures under local anæsthesia. The earliest mention of the method is in 1885 by Conway.[1] During the early part of this century occasional references are found. but the advantages to be gained by it have not been put forward to any extent in the medical press. Since the war the method has again come to the fore; in Vienna, Prof. Böhler has used it with great success as a routine, as he describes in his masterly little book.[2] In 1931 Hosford[3] recorded a series of cases of fractures reduced under local anæsthesia at St. Bartholomew's Hospital. As far as we can ascertain. however, the method has not been tried out in any of the out-patient departments of the teaching hospitals, and any work that may have been done has been of an experimental rather than of a routine nature.

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During the last 12 months we have reduced under local anæsthesia *all* the simple fractures that have come through our hands in the casualty and out-patient departments at the West London Hospital, and we set forth our views of this method after trying it on some 116 cases in the routine work of the departments.

The advantages of the method are as follows:—

(1) The immediate relief of pain and discomfort.

(2) A general anæsthetic, with its risks and unpleasantness *to the patient, is avoided.*

(3) Its applicability in the case of the aged, the shocked, and other patients for whom a general anæsthetic is undesirable.

(4) If further reduction has to be carried out at a later date, the patient is less likely to object to manipulation under a local than under a general anæsthetic (Böhler).

(5) The reduction can be performed single-handed; hence its special applicability to general practice.

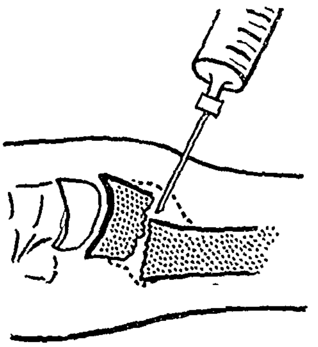
(6) The method can be safely used in the X ray room should the surgeon require to perform the manipulation under the fluorescent screen.

TECHNIQUE

The apparatus we employ is of the simplest, consisting of one 10 c.cm. record syringe, one hypodermic needle (No. 17), and one large-bore exploring needle (B.W.G. No. 18); the novocain can be carried in tablet form and made up to a 2 per cent. solution.

The site of fracture having been determined, either clinically or by X rays (the latter being especially useful but not essential), the skin over the area is cleaned and painted with iodine and then anæsthetised with a 2 per cent. solution of novocain, using the hypodermic needle. The exploring needle is then introduced obliquely through the anæsthetised skin down to the fractured bone ends (Fig. 1). Throughout this procedure the piston of the syringe should be gently pressed so that the point of the needle follows a flow of the anæsthetic solution.

FIG. 1



Anæsthetisation of the periosteum.

The operator must now satisfy himself in the following way that the needle is between the broken *bone ends:*—

(*a*) He can feel the fractured ends of the bone with the point of the needle.

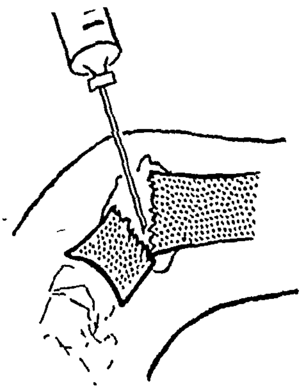
(*b*) *If the piston of the syringe is withdrawn blood will* flow into the syringe, showing that the point of the needle is in the hæmatoma present at the site of all fractures. (This of course applies to recent fractures, before the hæmatoma has had time to organise.)

Then 20 c.cm. of the solution is introduced and the needle withdrawn. After waiting three minutes disimpaction is commenced (Fig. 2). It may or may not be necessary to make subsequent injections from different angles. After five minutes the part will be completely anæsthetised, and complete and painless reduction can be carried out. That anæsthetisation of the part is complete must be pointed out to the patient by movement of the fractured surfaces—a manœuvre previously painful. His entire confidence is thus gained, and this eliminates the possibility of any voluntary muscle spasm and secures complete relaxation of the part, which is essential for the subsequent procedure of correct reduction.

In a fracture about a joint, the attainment of correct anatomical replacement can be tested by active range of movement of the joint, a unique advantage of this method over the passive movements of an anæsthetised patient.

We have used amounts of 20 to 40 c.cm. of 2 per cent. novocain for the average fracture of the *smaller bones* (Colles's), though one of us used 100 c.cm. for the operation of disimpacting a fracture of the neck of a femur in a man aged 46.

FIG. 2



The periosteum has been anæsthetised and disimpaction is now possible.

RESULTS

The following list shows the types of fractures in which we have employed local anæsthesia.

	Number reduced
Fractures of the Long Bones	
Femur, neck of. In a male aged 46 years—a comminuted fracture of base of neck. Disimpacted and position corrected two days after injury	1
Humerus, lower third and shaft	3
Radius and ulna, all types of (especially Colles')	54
Tibia and fibula, shaft, malleolar and Pott's	10
Fractures of the Short Bones	
Nasal	3
Clavicles; before reduction or application of braces	7
Phalanges	9
Metacarpals. Comminuted (especially Bennett's) before application of plaster	5
Tarsals	2
Cuneiform } before manipulation and the application of plaster splints	2
Scaphoid } before manipulation and the application of plaster splints	3
Dislocations	
Elbow	3
Patella	2
Ankle	4
Interphalangeal	8

Also for the application of plasters over the above fractures and torn ligaments.

We have so far had no complications in this work—e.g., sepsis, injury to nerves and vessels.

The objection has been raised that the introduction of the needle is not without dangers, since it may turn the category of a fracture from simple to compound; although this may be so in theory, in practice we have had no ill-effects. Further, we have discovered no pathological changes, either immediate or delayed, from the introduction of the solution into any joint when the fracture involved the bones about one. We have also gone into the question of the effects of the novocain on the bone union, and we have found that union takes place in the normal time, as tested clinically and by X rays taken over the period of union and up to six months subsequently.

The question whether this type of anæsthetic should be used for the reduction of compound fractures is debatable; certainly, unless the solution is sterilised and isotonic, one hesitates to introduce chemical substances into an area where septic organisms are present, unless that substance be an antiseptic. Again, waterlogging the tissues might be considered inadvisable when those tissues are going to be called upon to fight sepsis. Thus we feel that in these cases it would be preferable to carry out a nerve block higher up away from the septic field.

DISADVANTAGES OF THE METHOD

(1) *Children.*—The method is not suitable for young children. The youngest child we have successfully treated was 10 years of age.

(2) *Œdema.*—In some cases, especially where the fracture is in the neighbourhood of a joint, there is much swelling, which is increased by the introduction of the novocain solution. To some extent this difficulty may be overcome by elevation of the limb, massage, and the application of an Esmarch's bandage for a few minutes.

Clinical and Laboratory Notes

CONGENITAL ABNORMALITY OF THE EXTERNAL SEMILUNAR CARTILAGE

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Gross abnormalities of the semilunar cartilages are rare in otherwise normally developed knee-joints, though minor variations in their attachments are not uncommon. A flattened disc instead of a meniscus is the abnormality of the external cartilage which has been met with by many surgeons on rare occasions but the literature is scanty. Poirier[1] has described two cases. Timbrell Fisher[2] has recorded a case of which he gives an illustration.

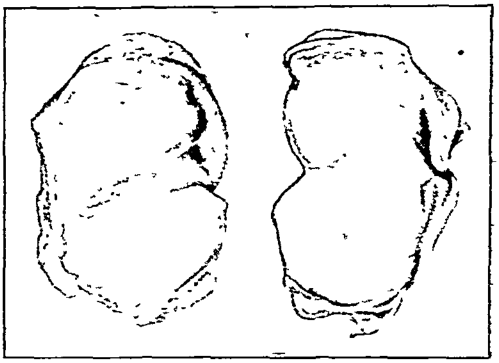
The external semilunar cartilage is developed from the mesenchyme separating the two primitive joint cavities of the knee. In many animals the external cartilage forms a more nearly complete septum than is found in man. In the apes it is in the form of a ring, a condition which occasionally occurs in man as a variation. No animal higher in the scale than the lizard is provided with a complete disc

The condition is one of surgical interest because it gives rise eventually to characteristic signs and symptoms of internal derangement of the knee-joint. It may be unilateral or bilateral. In both cases described below the patients were girls whose symptoms commenced during childhood.

The usual history is that on straightening the knee from a flexed position there is an audible and palpable thud. After months or years the knee becomes painful and occasionally there is effusion into the joint. On examination the joint appears to be normal and there is no local tenderness. Flexion and extension are both free and full but on extending the knee, at a point where the leg makes an angle of about 170° with the thigh, there is a loud thud. the tibia rotates slightly on the femur, and the anterior part of the external cartilage becomes palpable to the outer side of the patellar tendon.

This movement within this joint has not as a rule the same character as the click heard on examining a torn or abnormally mobile external cartilage of normal type but gives the impression that there is some larger obstacle jammed between the condyle of the femur and the tibia. Differential diagnosis is also made easier by the fact that derangement of the external cartilage is uncommon in children and is usually preceded by a definite injury. Removal completely relieves all symptoms.

The accompanying illustration shows the left and right external cartilages. The upper surface shows the depressed area on which the condyles of the femur rotate. On the postero-lateral edges the grooves for the tendon of popliteus are clearly visible. Each cartilage is extremely wide and formed an almost complete septum across the outer half of the knee-joint. The medial free border was not longer than 5 mm.



Drawing of the external cartilages from Case 1.

Case 1.—Girl aged 13. Complaint of the knees "giving way" for six or seven years. No history of injury. The knees also click and are painful at times. She gave a vague history of locking of the joints and effusion into them. On examination no effusion or tenderness of the joints which have a full range of movement. In the right knee there is a definite bump on the outer side felt on extending the knee at 170°. The condition of the left knee is similar but not so pronounced.

Both external cartilages were removed by operation. The cartilages (see Figure) were extremely wide, forming an almost complete disc across the outer half of the knee-joint. The inner free borders were not more than 5 mm. long. Each cartilage showed a depressed area on which the condyle of the femur rotated.

Case 2.—Woman aged 26. When aged 10 the left knee became suddenly locked in flexion and it was straightened by her doctor. Since then it has always clicked painfully on extension. On examination the knee was not swollen or tender. On extension there was a painful bump which could be felt over the outer side of the joint.

The external cartilage was removed by operation. It formed a complete section across the outer half of the joint and appeared to be wedged at times between the joint surfaces.

I am indebted to Mr. E. P. Brockman for permission to publish these cases.

A CASE OF NODAL RHYTHM

By F. Bennett Julian, M.C., M.B., M.Sc. N.U.I.
HON. PHYSICIAN TO THE LIVERPOOL HAHNEMANN HOSPITAL

Nodal rhythm was a term originally used by Sir James Mackenzie to describe that condition which Sir Thomas Lewis in 1910 showed to be due to fibrillation of the auricle. Mackenzie evidently thought that, the auricle being completely paralysed, as evidenced by the absence of the auricular wave in jugular and liver tracings, the cardiac impulse was generated from the auriculo-ventricular node, or, at any rate, that the auricles and ventricles contracted

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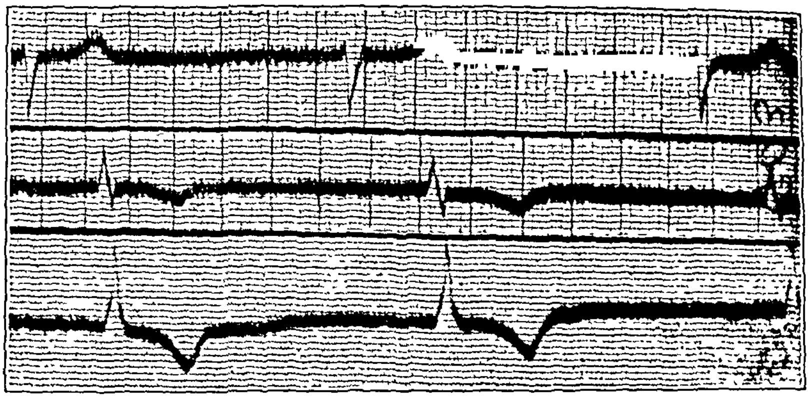
[1] Poirier, P., and Charpy, A.: Traité d'anatomie humaine, Paris, 1911, vol. i., p. 82.

[2] Fisher, A. G. Timbrell: Internal Derangements of the Knee-joint, London, 1924, p. 14.

FIG. 1



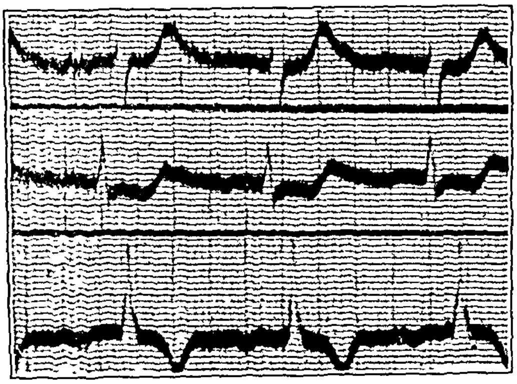
Nodal rhythm. The irregularity and absence of the P wave are noticeable.

simultaneously. Later work showed that the origin of the cardiac impulse was still the auricle, but that the auricle did not as a whole contract.

There are cases, however, in which the cardiac impulse does originate in the junctional tissues, and in which the auricle and ventricle do contract simultaneously. To these cases the term nodal rhythm is now applied. The condition is identified in the electrocardiogram by the entire absence, or in some cases by the inversion of, the P wave. The condition is not necessarily of serious clinical significance.

It is the constant rule in these cases to find that the heart action is quite regular, and so far as can be determined there have been no cases published of departures from this rule. The following case is therefore of interest, exhibiting as it does irregular nodal rhythm.

FIG. 2



Ten minutes after the administration of adrenaline 0·5 c.cm. The rate is now regular, and accelerated, and the P wave is in its normal position. It is inverted in lead II.

The patient, a girl aged 7 years, was observed to have a very slow pulse, seldom rising above 50, even when suffering from a febrile state, e.g., measles, with a temperature of 103° F. or over. She seemed healthy and happy, had a moderate appetite, and slept well. She suffered very little, if at all, from respiratory distress on exertion. Her mother stated that she was perhaps unduly tired after walking. There was no history of rheumatic or scarlet fever.

She was admitted to the Liverpool Heart Hospital for observation and was electrocardiographed on numerous occasions. Every electrocardiogram showed the same features—viz., a slow irregular beat, with an entire absence of the P wave. Atropine, gr. 1/50; ephedrine in doses varying from gr. 1/8 to gr. 1/2 t.d.s.; quinidine, in increasing doses from grs. 4 to grs. 7 t.d.s. were tried, but none had any effect on the main characteristics of the electrocardiogram.

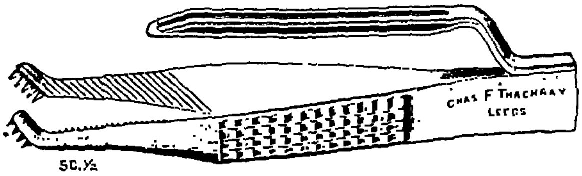
The result of the administration of adrenaline was, however, very striking. An electrocardiogram taken five minutes after the injection 0·5 c.cm. showed not only an increase in and a regularisation of the beat, but also revealed the missing P wave. Another picture taken ten minutes after the adrenaline showed the same features. After the effect of the adrenaline had worn off the electrocardiogram resumed its former characteristics.

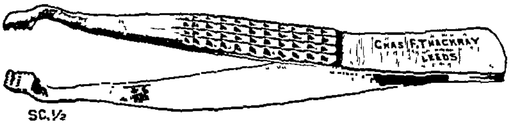
I have to acknowledge the kind assistance rendered by Dr. Isaac Harris in the elucidation of this case.

NEW INVENTIONS

FORCEPS FOR USE WITH MICHEL AND KIFA CLIPS

THE forceps here illustrated have been made for use with Michel clips, and particularly with the Kifa suture clips, and have proved very effective. The teeth of the holding forceps are after Childe's pattern, thus facilitating the approximation of the edges of the wound. The roughened areas on both the clip holder and the insertion forceps help the surgeon to obtain a firm grip of the skin edges, and to apply firmly to the skin whichever clip is used. The gallery holding the clips is the exact width of the Michel clips, is easy to load, and the strength of the spring, enabling the clips to be easily removed, prevents them from falling off or overriding each other, as frequently occurs. The suture forceps insert both varieties of clips easily, and remove the Kifa clips as easily, without pain to the patient. The several widths of the Kifa clips available particularly facilitate the closure of many upper abdominal and other wounds, where Michel clips tend to slip owing to the thickness of the skin.





They are made in rustless steel by Messrs. Chas. F. Thackray, Park-street, Leeds.

L. DOUGAL CALLANDER, M.D.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

THE meeting of this section on June 17th was devoted to a discussion on

Modern Methods of Alleviating Pain in Childbirth

The chair was occupied by Mr. VICTOR BONNEY, the President.

Mr. L. CARNAC RIVETT said that anæsthetics were discovered 100 years ago, and as long as 80 years ago Sir James Simpson used chloroform to lessen the pains due to childbirth. Twilight sleep enabled freedom from sensation to be continued for a long time, while nembutal and similar preparations could be used either by the mouth or intravenously, and provided powerful narcotics. Spinal anæsthesia, rectal ether, and avertin had been employed in suitable cases. It was something of a disgrace that the parturient woman could still say, in the words of the Psalmist, "The pains of Hell gat hold upon me." In quite 90 per cent. of normal deliveries it was possible to alleviate the labour pains. Three years ago he was able to bring the question to a practical issue. Lady (Rhys) Williams and Mrs. Baldwin started a fund to defray the cost of using anæsthetics in lying-in hospitals, and an offer from this fund was accepted by the management of Queen Charlotte's Hospital. The object was to help normal delivery.

VARIOUS ANÆSTHETICS REVIEWED

Nitrous oxide as an analgesic was practically ideal; as now administered it was operative for a long period, and was safe. It produced complete unconsciousness, which could be continued as long as the labour was likely to last, and was also susceptible of reinforcement by ether. Moreover, it did not inhibit uterine contractions, as did ether and chloroform. A drawback to nitrous oxide was that it could only be induced by a tight-fitting mask and by means of a heavy apparatus which required skilled manipulation.

This was an important consideration, since half the confinements in this country were conducted by midwives alone. Twilight sleep sometimes caused a complete cessation of the uterine contractions, though in time these were resumed; and Mr. Rivett had never had an infant death which he could ascribe to this cause. Sometimes the hyoscine acted as an excitant, and the woman became maniacal; and it was necessary to have an attendant present all through labour to vary the dose as required. Spinal and sacral anæsthesia were both too short to be of real value in normal delivery. Spinal analgesia, moreover, increased the contraction of the circular fibres, producing a violently contracting uterus with poor expulsive power. In rectal anæsthesia there was sometimes difficulty in keeping the drug in the rectum; it was liable to be expelled with the next pain. Ether was not suitable for normal labour; if given in small doses it was liable to cause excitement, if given for long periods bronchitis might ensue. Chloroform, the first anæsthetic to be used in labour, was still, in Mr. Rivett's view, the best, though not for obstetric operations. A very small quantity given when the patient felt a pain coming on sufficed to abolish the pains of labour. There was less likely to be a spasm of the muscles when the pain reflex was abolished. Under chloroform the average duration of the second stage, he found, was 45 minutes for a primipara, and under half an hour for multiparæ. Over 2000 women had had chloroform analgesia at Queen Charlotte's without untoward results. In a small proportion it was not successful in abolishing pain; in a very few there was excitement, probably because the anæsthesia was started at too late a stage. At the Middlesex Hospital, for the last six years, whiffs of chloroform had been given in labour cases as soon as the woman began to cry out because of the pains; no increase in unfavourable events which required forceps had occurred, nor were there any cases of perineal laceration.

CHLOROFORM IN CAPSULES

With regard to the economic aspect, if at least 90 per cent. of the 600,000 of the mothers' delivered in this country every year were to have the pains of labour abolished, the analgesic must be in the hands of midwives. Even if a doctor was engaged he could not spend 10 to 12 hours on each case. Doctors attended less than half the confinements in the country, midwives conducting most of the cases alone, and during most of the labour period the midwife had nothing to do. The method of using chloroform could soon be taught, and in intelligent hands there was no danger. Mr. Rivett had been trying small quantities of chloroform put up in ampoules, similar to those used for amyl nitrite, which were crushed into lint when ready for use. Each ampoule contained 20 m. of chloroform, and maintained analgesia for seven to ten minutes. Of 200 cases so treated at Middlesex Hospital, in 73 per cent. the result was good, in 20 per cent. fair; so that the method achieved some measure of success in 93 per cent. of cases. In six of the 200 cases there were perineal lacerations; in 5 per cent. there was post-partum hæmorrhage. There were no deaths.

Mr. Rivett expressed the hope that the section would pass a resolution requesting the Central Midwives Board to issue certificates to those midwives who had received sufficient instruction permitting them to administer light anæsthesia for normal deliveries. The barbiturates needed further investigation.

THE NEED FOR AN ANÆSTHETIST

Dr. I. W. MAGILL said that patients nowadays wished to know nothing about the birth of the child; but to obtain such complete amnesia with a drug was dangerous unless an anæsthetist was present to judge the progress of the case and to adapt the dose. Barbiturates certainly should not be handed out to midwives. Nembutal in a dosage of grs. 4½ might be successful, but might produce excitement and no amnesia. The best anæsthetic was a combination of nitrous oxide and oxygen, which was eliminated without leaving any deleterious effect to mother or child. Chloroform was a wonderful anæsthetic, and most of the trouble attributed to it was due to faulty methods of administration.

Dr. R. H. PARAMORE said that he had used spinal anæsthesia for three years for operative work, and in three cases of what he regarded as normal labour. It was important to curtail the second stage of labour and get over the obstructions to the birth of the child when the cervix was fully dilated. Spinal anæsthesia appealed to him as the anæsthetic for the use of the medical man.

Miss J. A. OLDAKER produced an analysis of 450 consecutive patients at the Royal Free Hospital who had sedatives during labour. Sedative drugs were *given as soon as the patient felt discomfort* during the contractions. Some 170 patients had no drug of the kind, either because the contractions were not very strong or painful, or because they were not admitted until the second stage. In 60 cases bromide and chloral (grs. 20–30 of each) were *given by the mouth and repeated. Opoidine* (1 c.cm.) and magnesium sulphate (2 c.cm.) were given together by intramuscular injection and there had been no experience of sepsis at the site of injection. In a certain number of cases forceps were necessary on account of ineffective uterine contractions in the second stage; some patients were given morphia gr. ¼. There had never been cause for anxiety because of the child's condition. 259 patients had intermittent nitrous oxide and oxygen anæsthesia during the whole of the second stage. When this was given the contractions were never diminished, but were sometimes increased. She had not yet sufficient data to enable her to express an opinion on the chloroform capsules.

Dr. H. E. BOYLE considered nitrous oxide and oxygen the ideal anæsthetic for childbirth, administered *by an anæsthetist who knew something of* obstetrics. He was against allowing midwives to use any dangerous drug. The efficacy of nitrous oxide and oxygen was increased by the judicious addition of CO_2.

THE ATTITUDE OF THE CENTRAL MIDWIVES BOARD

Dr. J. S. FAIRBAIRN said that a large proportion of working-class women delivered themselves, and it was highly desirable, from every point of view, that they should be relieved from prolonged pain. The chloroform capsule promised to be a most valuable general means to this end. The question had been under discussion at the Central Midwives Board. He understood that the London County Council were trying it out in some of their hospitals. The Central Midwives Board had asked the Section of Anæsthetics of the Royal Society of Medicine to express an opinion on the safety of the capsule in the hands of midwives. Small quantities of anæsthetic were required over a fairly long time, and to have a doctor in attendance during all that time was an expense that most women could not afford; moreover, the doctor could not neglect his other practice to that extent.

Dr. HERBERT CHARLES said his experience with chloroform in labour was that the pains were not felt and the mother remained conscious and could talk. Spinal anæsthesia was excellent for Cæsarean section, but not for the early stages of labour. He had the profoundest respect for chloroform in labour; it was a boon to the poor woman suffering in childbirth.

Dr. R. A. GIBBONS said he gave chloroform in the ordinary way with a mask in childbirth, and found that in small doses it kept the patient free from pain. No danger attended its use unless it were pushed. If there was exhaustion, a little ether could be given. He hoped it would be possible to sanction the use of chloroform capsules by midwives.

Mr. EARDLEY HOLLAND agreed there was a great future for chloroform capsules in the second stage of labour, but he doubted whether they were suitable for administration over many hours. One could better judge of the effects of anæsthetics among private than among hospital patients, for the former could be followed up. Different women felt labour pains with varying intensity according to their temperament. Much could be done without drugs by talking to the patient and reassuring her and urging her to relax and so help the birth. In the first stage of labour he relied a good deal on chloral, grs. 40, dissolved in a considerable volume of water being slowly sipped. This medication formed an excellent basis for scopolamine and morphine.

Mr. A. J. COPELAND thought that with the capsules of chloroform there should be supplied a slip giving a few warnings—e.g., to hold the capsule not less than two inches from the face, and to place no covering other than the lint or mask over the face, and to use not more than one capsule at a time. Special wards might be set aside to investigate the comparative effects of different anæsthetics in childbirth. He favoured the addition of oxygen whatever anæsthetic was used.

Mr. J. P. HEDLEY thought that, in however small doses it was given, chloroform was undesirable in the first stage of labour. An anxious woman got more excited if she had chloroform early, and if she were given more, which she would certainly demand, the force of the uterine contractions was diminished.

Dr. KELSON FORD said that if midwives generally were to be allowed to use chloroform capsules he did not know how the rural chemist was to determine whether anyone asking for them should be supplied. It would be safer if the medical man could authorise their use.

The PRESIDENT said the suggestion that the Central Midwives Board should take action in this matter was a pertinent one. He could endorse the view that there were many difficulties in the way of authorising midwives to use chloroform.

Mr. RIVETT, in his reply, said he regarded normal labour as labour in which the woman succeeded in delivering herself without extraneous assistance. He always regarded it as a disgrace if the perineum was injured. If ether were given for several hours there was a risk at least of bronchitis, possibly of pneumonia. The law was that if a person could be shown to be competent, and trouble arose, she could not be prosecuted for negligence, but if the person concerned was shown to be incompetent, prosecution might follow. The issue of the capsules would depend on the doctor in any particular case. Chloroform was not included in the schedule of dangerous drugs, but hyoscine was.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE

AT a meeting of this society held at Manson House on June 16th, with Dr. G. CARMICHAEL LOW, the president, in the chair, the Manson medal was awarded to Prof. Theobald Smith, of New York, and was received on his behalf from the president by Dr. G. K. Strode, of the Rockefeller Foundation. A discussion on

Synthetic Antimalarial Remedies and Quinine

was opened by Colonel S. P. JAMES. The malaria commission of the League of Nations, he said, aimed at providing a cheap and abundant supply of a remedy which would limit attacks and prevent deaths from malaria by planting cinchona trees in malarious districts. The aim of chemotherapy was to provide a remedy for cases in which quinine was known to fail, a remedy which would supplement, but which would not replace quinine or injure the cinchona industry. Quinine might be effective with some strains of parasite, and synthetic drugs, such as plasmoquine, effective with others. Therapy must be studied not only in terms of the strain of parasite to be overcome but in terms of the different phases of each species of parasite recognised; plasmoquine had a selective action on gametocytes, but little effect on schizonts, while the opposite appeared to be true of quinine. The selective action of drugs indicated differences in the biological properties of the parasite in different phases. Therapy must also be studied in terms of the geographical distribution of strains, for the virulence of the parasite varied not only with the species but with different geographical strains of the same species. In some parts of Italy a more effective drug than quinine was already needed, and atebrin seemed to fulfil this need. Among a series of seven cases infected on the same day, five treated with atebrin were cured, while two treated with quinine were not cured. Contradictory observations on the properties of plasmoquine were probably due to the use of different geographical strains. With some strains plasmoquine prevented relapse. After infection with a Madagascar strain of benign tertian malaria, plasmoquine and quinine were found to be more effective in preventing recrudescence than plasmoquine alone. The tolerance or immunity acquired by the patient before treatment was begun were also factors to be taken into account in estimating the action of drugs, and the dose of infection, depending on the number of mosquito bites, also made a difference; even atebrin would not cure outright a severely infected case. Experiments were made with plasmoquine in the prevention of infection. With a dose of 0·06 g. of plasmoquine given daily for six days it had been found possible to prevent malignant tertian in every subject treated. No failures had been recorded with benign tertian until an experiment was made on nine or ten students at St. Mary's Hospital; the primary attack was prevented in every case, but five of the patients developed attacks of malaria between seven and nine months later. Plasmoquine was a causal prophylactic agent, but the dose necessary was too large to be taken for more than three or four days. A similar but less toxic drug was needed.

Dr. C. A. **Henry** reminded his hearers that the alkaloids of cinchona bark were quinine, quinidine, cinchonine, and cinchonidine. In their effect on malaria, he said, quinine and quinidine were about equal; cinchonine and cinchonidine were probably inferior to the other two. The malaria commission of the League of Nations had decided that it would be sufficient to provide a mixture of all the crystallizable alkaloids of cinchona bark instead of quinine, this preparation to be called totaquina, and to contain 70 per cent. of the crystallizable alkaloids, of which 15 per cent. must be quinine. Totaquine could be made in one of two ways; the product of the first method contained 77·9 per cent. of crystallizable alkaloids, of which 30·4 per cent. was quinine. The second product, made from manufacturers' residues, contained 78·5 per cent. of crystallizable alkaloids, of which only 20·7 per cent. was quinine, and more than 40 per cent. was cinchonine. The second product was far less effective than the first, but at the present time it was the only type available. The cinchona industry had been rationalised to make the supply meet the demand; 95 per cent. of the cinchona bark used was grown in Java. Suggestions were sometimes made that cinchona planting should be revived in the British Empire, but this would only reproduce the disorder of 20 years ago when too much bark was placed on the market.

Prof. N. H. **Swellengrebel** described an attempt carried out at Amsterdam to prevent the outbreak of fever and the appearance of benign tertian by protecting subjects with plasmoquine. Doses of 0·03 g. were given daily for six days, beginning on the day before exposure to infection. The attempt failed; all the patients except one developed malaria at the usual time, and the one who failed to do so developed an attack some months later. Of those who developed the primary attack, some were treated with plasmoquine, some with plasmoquine and quinine, and some with quinine only. All relapsed or else developed recurrences more than 24 weeks after the primary attack. Dr. Piebenga, working elsewhere in Holland, had reported a series of cases treated with quinine and plasmoquine in a large proportion of which there were no relapses or recurrences. Dr. Piebenga had been working with the home strain of benign tertian, using naturally infected mosquitoes. Prof. Swellengrebel said that in his own cases artificially infected mosquitoes were used, and the strain was the Madagascar strain of benign tertian obtained from England. The home strain was less reliable in causing malaria and was probably of a lower vitality than the Madagascar strain. The number of infecting bites in Piebenga's cases, moreover, was not known, but it was unlikely that they exceeded one bite per patient in that region; his own cases had averaged a large number of bites. The relapse-rate for Holland as a whole was 50 per cent.; the fact that 100 per cent. of Prof. Swellengrebel's experimental cases relapsed seemed to indicate that the strain of malaria used was exceptionally refractory to plasmoquine. His results did not contradict those of other observers, but only served to show that treatment with plasmoquine might break down where there were large numbers of infecting bites, or where the strain was particularly virulent.

Sir **Henry Dale** said that the method of testing antimalarial drugs had advanced; it was now possible to differentiate between the different phases of the parasite, so that the drug to be tested could be made to intervene at any stage.

Sir **David Prain** said that technical chemists used to interest themselves in the synthetic production, at a cheaper rate, of substances found in nature. They now followed another principle and attempted to provide a substitute which was an improvement on the natural substance. The idea was not a new one, but went back 600 years to a king of Castile, who shocked his priests by remarking that if he had been present at the creation he could have prevented many blunders. As soon as the chemist could provide the perfect substitute we should be able to dispense with cinchona, and we must already advise against any extension of the cinchona industry.

Dr. W. D. **Nicol** described the natural clinical course of 161 cases of benign tertian malaria which had been under observation for a year or more at Horton. They were infected with the Madagascar strain, and 140 developed fever at the end of the normal incubation period; 21 developed latent malaria 25 to 40 weeks after infection. In 110 cases the primary attack was terminated with quinine, in 18 with some quinine preparation, in 6 with plasmoquine, and in 6 with plasmoquine and quinine; among these, 29 had recrudesced within eight weeks, 13 relapsed between the eighth and the twenty-fourth week, and 39 recurred after the twenty-fourth week.

Dr. Philip Manson-Bahr mentioned a case of severe malignant tertian malaria with cerebral complications seen first on May 18th of this year. The patient was treated with one injection of quinine and then with atebrin for five days; he had made a good recovery, and appeared at the meeting in perfect health.

Prof. W. Schulemann said that it had never been the intention of workers at Elberfeld to produce a drug to contend with quinine. The aim was to produce new drugs which would give results which quinine could not achieve. It had been shown that in certain circumstances plasmoquine reduced relapses and recurrences; these findings needed confirmation with the same strains in tropical and subtropical countries. In subtertiary malaria plasmoquine did not appear to reduce the number of relapses, but the relapses with this strain were in any case few. In recent experiments made at Elberfeld by Dr. Kikuth on various species of avian malarial parasites it had been possible to study the action of drugs on separate phases in the life of plasmodia; he had found that atebrin acted on schizonts but not on gametocytes. These findings had been confirmed, but further prolonged experiments were needed. Quinine was not a causal prophylactic: it controlled clinical symptoms only during its administration. Colonel James, by giving 0·06 g. of plasmoquine for six days had prevented recurrence of attacks in 50 per cent. of his cases. Prof. Swellengrebel, using 0·03 g. for six days, had been unable to confirm these results. Probably the halving of the dose was sufficient to explain the discrepancy. As Colonel James had pointed out, the problem of malaria was becoming more and more complicated. It was not, however, necessary to test the virulence of every strain; laboratory results were not the only criterion, and the resistance of the host was an important factor in malarial infection. A detailed comparative investigation was needed to find out whether a strain of the parasite showed the same susceptibility to drugs in a native in the tropics as it did in a patient in a temperate zone. In order to get the best results with the drugs available we must take into account the variable susceptibility of the parasite to those drugs, and also its geographical origin. Atebrin and plasmoquine both had special properties, and clinicians must learn to choose the drug or the combination of drugs which would produce the best results in a given case. In order to get an idea of the value of the three drugs now available the coöperation of the laboratory and hospital with the general practitioner was needed. The ideal would be a single drug which was effective against every type and strain of the parasite, but in default of that we must learn to use correctly, and to develop, the weapons at our disposal.

Sir Malcolm Watson said that atebrin had been tried on a small series of cases in Malaya, and two out of four had relapsed. A single case treated with atebrin and plasmoquine had also relapsed. Experiments were now being performed on three groups of Malayan children, and results would probably be available in six months time. He thought there was evidence that the virulence of a strain might vary. Non-immune people entering an area where malaria was mild frequently became infected, and in turn infected the Malay population, with malaria which decimated both the newcomers and the residents. Presumably the virulence of the local strain had been increased by passage.

Sir Aldo Castellani thought plasmoquine curative, but less so than quinine. In acute pernicious cases he would advise the use of quinine in large intravenous and intramuscular doses rather than plasmoquine. In relapsing cases plasmoquine was useful when combined with quinine, but its special advantage lay in the treatment of patients who showed idiosyncrasy to quinine, and in black-water fever. Exceptionally, an attack of black-water might be started by plasmoquine. The value of synthetic drugs was that they provided a second weapon in addition to quinine.

Colonel James, in replying, said that he could not agree with Sir David Prain that synthetic drugs would affect the cinchona industry. Clinicians would continue to use quinine where it was the most useful drug, and the other remedies where they were applicable.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

At a recent meeting of this society held in Leeds Dr. S. B. Herd (Liverpool) described a case of

Chorionepithelioma of the Broad Ligament

The patient, aged 48, gave a history of ten normal confinements and one abortion. She missed three periods, and then had continuous bleeding for three weeks. As the uterus was of the size of, and felt like, a 12 weeks' gestation, she was treated as a threatened abortion, but the bleeding did not completely stop.

When she was next seen the uterus was no bigger, but the interval after the last normal period was 24 weeks. A diagnosis of carneous mole was made, and the mole was expelled spontaneously. It was typically carneous except for a few minute vesicles in one area, and on microscopical examination there was evidence of hydatidiform degeneration in this area.

For six months there was menorrhagia (no intermenstrual bleeding), but she then bled constantly for a month. Careful examination under anæsthesia, and curettage, failed to reveal any sign of placental tissue or chorionepithelioma, and the irregular bleeding ceased for a further six months, the periods being regular but excessive. Finally, about 16 months after the expulsion of the mole, the patient presented herself with a history of further bleeding for one month, and neuralgic pain in the left hip and thigh for the same length of time. The Aschheim-Zondek test was strongly positive, and there was a hard fixed mass which *proved to be on the left broad ligament*, and to have no apparent connexion with the uterus although the wall of the bladder was partly invaded.

This case, said Dr. Herd, was of interest because of: (1) the comparatively long history; (2) absence of growth in the uterus; (3) doubt as to the origin of the growth in the broad ligament; and (4) question as to whether earlier operation would have saved the patient's life. While extension from a chorionepithelioma of the uterus was possible, the growth apparently arose as a primary malignant condition in the broad ligament.

Dr. Herd also showed a specimen of Epithelioma of the Vulva removed from a patient aged 25.

Toxæmia of Pregnancy

Prof. Carlton Oldfield described three unusual cases of toxæmia associated with pregnancy. The first case resembled "milk fever" or "bovine eclampsia." The patient was a primigravida, who, after a low forceps delivery of a healthy child, began to vomit on the third day. This continued, and the temperature rose to 101° F. on the following day, and there was epigastric pain and jaundice with development of coma. On the fourth day, routine treatment having failed to produce any improvement in the condition, inflation of both breasts with air was carried out, and two hours later the patient began to improve.

The other two cases were similar in that persistent vomiting ended fatally, and that both were in the first pregnancy. Also anorexia was a conspicuous symptom, and was a contributory cause of the exhaustion. One of these patients gave a history of neurosis, and had severe vomiting until the sixteenth week when this ceased, but 12 days later drowsiness followed by coma developed. In both cases the urine was negative for evidence of toxæmia, and in spite of treatment both patients died. Autopsy revealed signs of mild toxæmia with some liver damage in each case, but this was hardly sufficient to account for death. Prof. Oldfield considered that these three cases suggested that the conception of toxæmia of pregnancy originating in the ovum is probably erroneous.

Dr. C. G. Paine (Sheffield) read a paper on Colony Variation in Hæmolytic Streptococci and its Importance in Puerperal Sepsis Immunity.—Prof. M. J. Stewart and Prof. Carlton Oldfield showed a specimen of diffuse endometriosis of the body of the uterus, secondary tuberculous infection, and old bilateral tuberculous salpingitis, and also a specimen of liposarcoma of the broad ligament associated with spindle-celled sarcoma of the uterus.—Mr. A. Gough described a case of Carcinoma of the Fallopian Tube.

REVIEWS AND NOTICES OF BOOKS

Handbook of Tropical Fevers

By N. P. Jewell, M.D., D.P.H., F.R.C.S.I., European Hospital, Nairobi, Kenya; and W. H. Kauntze, M.D., D.P.H., Deputy Director of Laboratory Services, Kenya. With a foreword by A. T. Stanton, C.M.G., M.D., F.R.C.P., Chief Medical Adviser to the Secretary of State for the Colonies. London: Baillière, Tindall and Cox. 1932. Pp. 485. 16s.

In his foreword Dr. Stanton points out the close coöperation between clinician and laboratory worker which has characterised the study of tropical diseases. Manson himself combined in rare degree the qualities of observer and experimenter, and his methods have been diligently pursued by his disciples. This volume records the results of a combined study of tropical fevers in Kenya. Most of the more important fevers to be met with in the tropics are described, even those which have happily not yet appeared in Kenya, for example, melioidosis and Oroya fever, still far away, and yellow fever which is an imminent danger. The choice of matter cannot have been easy, because many fevers occur commonly in temperate regions as well as in the tropics, and in other diseases more specifically tropical pyrexia is only an occasional, though possibly a well-marked, symptom. A chapter on the enteric group of fevers in the tropics has been included, but none on pneumonia and pulmonary tuberculosis, though the prevalence and severity of these infections in the natives of Kenya is recorded. Though they name the various works on tropical diseases which have been consulted in preparing this volume, and especially record their indebtedness to Castellani, Gordon Thomson, Robertson, et al., for the many illustrations taken from those authors' works to embellish their own, and to Dr. R. G. Cochrane for assistance in the excellent chapter on leprosy, the authors have given more than a compilation, they have, in the 26 chapters, embodied the more important results of recent research and have treated their subject matter lucidly with evident carefulness and in a practical manner. Where more than one method of diagnosis and treatment is noted, that one is given at length which their own first-hand experience has taught them is the more suitable and more reliable. They have produced a volume which may well serve student and practitioner as a trustworthy introduction to any intensive study of tropical fevers. The book is handy, well printed, well indexed, and well illustrated, in so far as photomicrographs can ever illustrate.

A Text-book of Embryology

By Mary T. Harman, Ph.D., Professor of Zoology in the Kansas State College of Agriculture and Applied Science. London: Henry Kimpton. 1932. Pp. 476. 18s.

This book is at its best in the earlier chapters, dealing with more general questions and with the early changes in the sex cells. After this it shows a tendency, common to nearly all books of its type, to cover the ground with too little attention to detail. The result is failure to provide an orderly consecutive account of the subject; a serious student would find difficulty in acquiring coherent and satisfying ideas about any regional or organic development from such material. On the other hand, there is evidently a demand for books on embryology which aim no higher than the standard of ordinary examinations, and Prof. Harman's book is a complete and compact work within these limits. It is well produced and profusely illustrated.

Asthma and Hay Fever in Theory and Practice

By Arthur F. Coca, M.D., Matthew Walzer, M.D., and August A. Thommen, M.D. London: Baillière, Tindall and Cox. Pp. 851. 45s.

Publications on asthma and allergic diseases continue to appear in increasing number. This volume offers a comprehensive review of our knowledge of these conditions by three workers from Cornell University and Bellevue Hospital, N.Y. The first part, by A. F. Coca, is devoted to hypersensitiveness, anaphylaxis, and allergy. Much of it is taken up with the author's own researches, but since he refers to more than 370 articles from the literature he cannot be accused of ignoring the work of others. The term "atopy," here used to include asthma and hay-fever, is derived from the Greek atopia, a strange disease; the sensitising body present in the sera of hypersensitive persons is named "atopic reagin," also a strange sound to English readers. The terminology of "allergic" disorders is already puzzling, and the introduction of new names without explanation or discussion will hardly dispel the confusion of the general medical reader.

In the second and third parts of the book asthma and hay-fever are considered separately in great detail, a wealth of experimental and clinical data being supplied. Nearly 100 pages are devoted to "atopens and other excitants" which are held to range from animal emanations such as rabbit, cat, and horse hair, feathers, wool, and dust to almost every known type of foodstuff, including meat, fish, eggs, milk, nuts, vegetables, spices, chocolate, alcoholic and even soft drinks. The number of possible atopens is, in fact, so vast as to discourage those who have been hoping to get constant specific reactions to skin tests in asthma and allied conditions. The greater part of the section on hay-fever deals with botanical minutiæ about plants and pollens concerned in the causation of this condition. Over 1600 references are given in the bibliographies to Parts II. and III. This volume will take its place as a valuable work of reference for specialists, but is hardly one to which the physician will turn to refresh his knowledge of general principles.

Vision and Colour Vision

By R. A. Houston, M.A., D.Sc., Lecturer on Physical Optics in the University of Glasgow. London: Longmans, Green and Co. 1932. Pp. 234. 15*s*.

This book is a physical and mathematical approach to the complex problems of vision and colour vision; it is valuable not only for its critical analysis of recent work on the subject but also for the mass of original work it contains. The author questions such entrenched views as the duplicity theory of vision, holding that it is accepted for the simple reason that no other theory has been put forward—though Edridge-Green's view is given. Weber's law on the discrimination of intensity is demolished by a mathematical analysis which proves that its results represent nothing but a Gaussian curve of error. On colour vision the author is at one with all physicists in decrying introspective analysis, but the Young-Helmholtz theory dear to physicists does not escape unscathed. In fact, he advances cogent proof that mathematically it is untenable. The classification of the colour blind into deuteranopes and protoanopes is regarded as having descriptive value, but is seen as artificial when the colour blind are studied statistically. Houston's own view of colour blindness is that it is due to an irregularity in the working of retinal synapses, though he admits that the mode of action he postulates is hypothetical.

The book is a sound and provocative piece of work.

Flat-foot

By S. D. Fairweather, M.A., M.B., Ch.B. London: John Bale Sons, and Danielsson. 1932. Pp. 76. 7*s*. 6*d*.

In this little book Dr. Fairweather launches a severe attack upon the world in general for its stupidity in adding heels to its footwear. To this habit he attributes flat-foot and indeed almost all mechanical disabilities of the foot. He says that when heels are worn the outer part of the foot is removed from the ground and the weight rests on the heels and fore-part only. He says also that the centre of gravity of the body is thrown forward, and that to overcome this the muscles of the back, of the thigh, and of the legs are in a state of more or less tonic contraction; hence, in his view, come fatigue, often neurasthenia, and sometimes sciatica. A simple experiment devised by Mr. P. B. Roth lends no support to the theory that the centre of gravity is thrown forward by heels. He has shown that if a bare-footed woman stands on two adjacent weighing machines with the heels on one and the fore-feet on the other, two-thirds of her weight is found to fall on her heels, and one-third on her fore-feet; if the experiment is repeated with a woman wearing ordinary heeled shoes the proportion of her weight on either scale is unchanged. It is true that when cheap high-heeled shoes with weak shanks are worn the heels are raised and the weight rests only on the heels and the fore-part of the foot, but a well-constructed shoe gives as much support to the outer part of the foot as it would have if it were flat on the ground. Dr. Fairweather's arguments are not convincing.

The Heart and Spleen in Health and Disease

By G. Arbour Stephens, M.D., B.S., B.Sc. Lond., Consulting Cardiologist, King Edward VII. Welsh National Memorial Association; Consulting Physician, Cardigan and District Hospital, and Llandovery and Clydach Cottage Hospitals. London: H. K. Lewis and Co., Ltd. 1932. Pp. 139. 7*s*. 6*d*.

Dr. Arbour Stephens has for some years carried on research work, more particularly in connexion with calcium metabolism and disorders of the heart. In this book he brings together the main ideas underlying all this work. The first chapter describes his modified stethoscope, which he calls the "cardioscope," and restates the author's theory on the production of the heart sounds. The second chapter deals with blood pressure, more particularly the diastolic pressure which is renamed the "basic pressure," and supplies a description of a new method for arriving at this figure. In subsequent chapters reasons are given for associating the spleen closely with the heart and the circulatory system, and arguments are set out to prove that auricular fibrillation, flutter, and tachycardia are not separate entities, but 3 out of 24 possible stages in the same type of disordered action. Considerable space is devoted to a discussion of predisposition, which is defined as a definite state of disordered action or disease. The spleen is shown as the refitting shop for the corpuscles in connexion with the oxygenating function of the circulatory system. In the chapter devoted to acute rheumatism and chorea, particular stress is laid on the fact that these diseases occur in what is termed the "acid class." The author explains in detail why he considers that the wrong feeding of adults is responsible for much of the heart trouble arising in later life. He emphasises the importance of diagnosing heart disease early, and has found that in every case of acute inflammation of the tonsil examined the heart is disturbed, as shown by an alteration in the basic pressure. The teaching in the last chapter is described by the author as "full of difficulties and highly dangerous, but that is no reason why it should not be properly faced and studied," and this remark is not wholly inapplicable to the whole book.

Anatomy of the Nervous System

Fourth edition. By Stephen Walter Ranson, M.D., Ph.D., Professor of Neurology in Northwestern University Medical School, Chicago. London: W. B. Saunders Company. Pp. 478. 32*s*. 6*d*.

Prof. Ranson writes throughout for students of neurology working in laboratories and makes a consecutive story out of his material while arranging it to provide a work of reference of wide scope. We hope that in the next edition he will see his way to a less cavalier treatment of the transverse peduncular tract and its endings, but otherwise the information supplied is adequate. The present issue has an excellent new feature in the shape of a series of sections through the brain stem; these are being added now to many neurological works coming from America. Altogether a sound and useful book.

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See *The Medical Press and Circular*, April 27th, 1932, pp. 348–351: Ambulatory Treatment of Fractures and Diseased Joints by the Hoefftcke Extension Splint.

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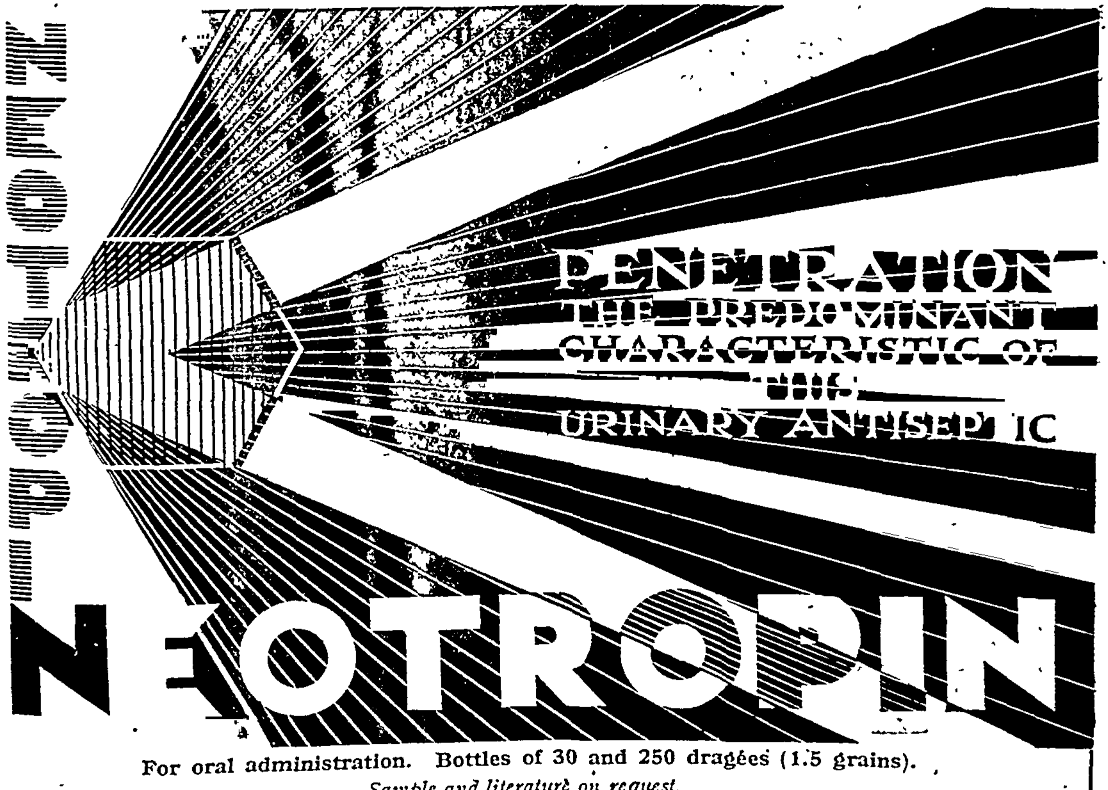

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THE LANCET.

LONDON: SATURDAY, JUNE 25, 1932

THE UNAUTHORISED OPERATION

The litigation to which surgeons are exposed is usually based on an allegation of negligence. A recent case is a reminder that they are also liable to be sued for trespass to the person if it can be proved that, in performing an operation, they have exceeded the authority given by the patient. Three statements may here be quoted from "The Conduct of Medical Practice." A patient who consults a doctor gives implied consent that the doctor shall be entitled to do all such acts as he considers reasonably necessary for discharging the duty of diagnosis, regard being had to the state of medical knowledge and to his own personal experience. A practitioner who proposes any dangerous or painful act or any act causing, if unsuccessful, a permanent disability, should supply the patient with the material information to enable him to give or withhold consent. Finally a surgeon, though circumstances may make it difficult to attain the ideal of having patients' written consent to the operations performed, may expose himself to liability in damages for trespass to the person (a legal classification which includes assault and battery) if he exceeds his authority.

These general observations will serve as introduction to an examination of the High Court action brought last week against the Royal Surrey County Hospital and the surgeon in charge of its gynæcological department. Damages were claimed on the several grounds of negligence, breach of contract, and trespass to the person. The plaintiff complained that the surgeon, contrary to her instructions and wishes, performed on her at the hospital the major operation of removing her uterus, though she had consented only to the minor operation of curettage. As will be seen from the report on p. 1377, the jury found that her complaint was justified. Her medical attendant had written a letter to the hospital conveying her refusal to undergo the major operation. This letter, from some cause inadequately explained, reached the hospital but was not brought to the surgeon's notice. There was thus an error of hospital administration which made it almost inevitable that the plaintiff would succeed in her claim, though there was some evidence (strongly denied by the plaintiff) that she was aware of the nature of the operation about to be performed and that she made no objection. Where a claim of this kind succeeds, a jury may easily award substantial damages. The facts of the case, however, were capable of being interpreted as an occasion for congratulation rather than of heavy compensation. For the patient suffered from epileptic fits which had become increasingly serious during recent pregnancies.

These proceedings were instructive both on the question of a surgeon's authority and on the question of eugenics. It is essential to keep these two points apart. An official inquiry into sterilisation is proceeding but it will be a long time before the law is changed in the direction of compulsory sterilisation against the patient's wish. The law, as Lord Hewart explained to the jury, does not enable a surgeon to say "If I had my way, I would sterilise the patient," and then to go on and perform the operation against the patient's desire. It is one thing to say that, if the patient had consented, the operation would have been proper; it is quite another thing to say that, in the absence of her consent and in contradiction of her expressed wishes, the operation was proper. The case is also important on the question of hospital administration; a hospital cannot afford such oversights as the loss of an important letter conveying the patient's precise wishes. In a proper case the damages might have been heavy. We may note, too, Sir Henry Simson's answer (given during cross-examination) that, if his attention were drawn to a discrepancy in papers relating to a patient on whom he was about to operate, he would report the matter to the hospital authorities and see that the patient was asked about it, or he would ask the patient himself.

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SEAMEN IN CARGO SHIPS

The Shipping Federation, which is the chief association of shipowners, decided in May, 1929, to set up a committee to work out a standard accommodation suitable for seamen on cargo steamers, and chose for this purpose seven marine superintendents and two shipbuilders, who had the advantage of calling on Dr. C. White, M.O.H. of the Port of London, for advice in regard to ventilation and hygiene generally. In the report[1] of that committee, which has now been issued, the main feature is a definite proposal, with plan, for the crew's accommodation on a cargo steamer of 6000 tons, taken as a type example, manned by 12 sailors and 12 firemen. Two striking advances catch the eye at once. The first is that the men are to be housed aft, in a deckhouse under the poop, where they will have better lighting and ventilation, less risk of injury in case of collision, less danger and discomfort in heavy weather; also, with the galley now more accessible, they will get their food hotter and more reviving just when they want its comfort most. The second, an even greater improvement, is the proposed increase of the height between decks from the statutory 6 ft. to 7 ft. 9 in., which will, as the committee remarks, facilitate ventilation, and, if we read the plan aright, will give to each man in his sleeping quarters 150 cubic feet instead of the 72 now the minimum there, besides another 100 cubic feet with which he seems to be provided in the messroom. That they have made this material advance is greatly to the credit of the committee. A number of other small but useful proposals are evidence of the increasing interest taken by marine superintendents in the comfort of the men, now that attention has been focused upon them. Thus, to safeguard the privacy of the crew, a separate water-closet is to be provided for dock labourers employed on board; a new container for bringing food down hot from the galley is being contrived, enamel paint is thought of for crew spaces (remember this is on cargo ships), while mosquito-screening of doors and windows of ships in the tropics, an isolation hospital for ships with more than 50 of a crew, and a splash-guard for the outer ends of soil-pipes, will all increase the comfort of the men. It is a pity the committee has not had more generous ideas about fresh water and hot-water supply to lavatories; few material things raise a man's self-respect, and make discipline more endurable to him, than opportunities to keep himself clean. The committee complain there are no trustworthy statistics about the health of seamen. They did refer to Surg. Capt. T. B. SHAW's book on "Naval Hygiene," but did they consult the Admiralty? Much must be known there, and at least why, with the Army authorities, they decided to allot 200 cubic feet of space to each man on a transport ship.

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[1] From the Secretary of the Shipping Federation, 52, Leadenhall-street, London, E.C.3.

The report shows a tendency to blame all the ill-health of seamen on their experiences ashore, which are thought to neutralise the effect of the good food the men get on board. Certainly the food has been good since Mr. LLOYD GEORGE, then President of the Board of Trade, piloted through Parliament the Merchant Shipping Act of 1906, requiring ships' cooks to be certificated, provisions put on board to be inspected as to quality, and issued in statutory amount. Not until then had shipowners any reason to be proud of the diet of the crews of cargo steamers. One cannot help a feeling of regret that this committee was not in being 30 years ago, when Dr. W. COLLINGRIDGE's famous lecture on Practical Points in the Hygiene of Ships was delivered[2] before the Shipmaster's Society of London, and shipowners were better off and seamen better employed. When we begin again to build ships, and along the lines of this report, the Federation will find that its ships are manned by healthier and more contented seamen.

TUBERCLE AND PSYCHE

Dr. ERICH EBSTEIN, whose death last year in the early fifties cut short a remarkable literary career, left material for a series of short pathological studies ("pathographische Skizzen") of famous people who have suffered from tuberculosis. He had completed more than fifty of these studies, which range from JOHN CALVIN to EUGENE O'NEILL, and these have been collected in a posthumous work, which includes also a short historical account of the treatment of tuberculosis at spa and sanatorium, and a list of works on psychology and psychiatry in relation to tuberculosis. Prof. G. B. GRUBER, of Göttingen, has contributed an introduction entitled "Tuberkulose als Schicksal," which gives a title to the book.[3]

Among the many psychological reactions to tuberculosis Prof. GRUBER recognises those of the two fundamental types of KRETSCHMER's classification—the reaction of the cyclothymic and the schizothymic man. EBSTEIN's character studies illustrate these types and others less clearly defined. There are men with warm sympathetic reactions to life and those whose general outlook is austere and gloomy. The names of many of the men and women are world famous—among them for example are SCHILLER, GOETHE, CHOPIN, and ROUSSEAU; a few are little known outside special circles. The three Englishmen included are AUBREY BEARDSLEY, JOHN KEATS, and LAURENCE STERNE. A list of 80 names of famous consumptives whose lives are not dealt with biographically is appended, and in this list the BRONTË sisters, OLIVER GOLDSMITH, and ROBERT LOUIS STEVENSON are mentioned. It is regrettable that Dr. EBSTEIN did not select STEVENSON for one of his illuminating studies in view of some possible difficulties and doubts in the diagnosis of his chronic illness. The list, long as it is, is by no means complete; the most learned encyclopædist could hardly make it so. But the names recorded are startling enough to show how the mind of man can rise above physical disability. How far tuberculosis is unique in this respect, and whether there is, after all, a special temperament associated with tuberculosis is another matter. Amongst the chronic diseases which last long and affect for good or ill a man's outlook on life—chronic rheumatism, valvular disease, blindness, deafness, and so on—tuberculosis is peculiar in at least one respect: the frequent bouts of toxæmia, which alternately stimulate and depress mental activity. This is hardly, however, sufficiently distinctive a characteristic to place tuberculosis in a class apart, for the difference may be one of degree rather than of kind. The considerable literature which has accumulated suggests at least that there is a fascination about the mental reaction of the tuberculous subject, and the possibility that it is classifiable. Dr. EBSTEIN has not been ambitious; his book is not a philosophical treatise, but rather an elaboration of the point of view expressed in a book entitled "The Fighters of Fate," published in America some three or four years ago by J. A. MYERS; that the victim of tuberculosis must either meet his fate bravely and compensate for his disability or must go under. Neither Dr. EBSTEIN's sketches nor Prof. GRUBER's introduction are of the morbidly inquisitive order which will encourage a sentimental introversion in the mind of the reader; they are serious attempts to understand a problem which will always have a fascination for medical men. It is interesting to find how large a part Davos has played in the lives of the last and of this generation of consumptives. This resort figures again and again in the biographies. The study of tuberculosis is enriched too, from time to time, by vivid descriptions of the disease, such as those of the poet KLABUND (Alfred Henschke). A small collection of portraits is included. None of them is quite so striking as the famous self-portrait of LAENNEC at Kerlouarnec, reproduced in Sir WILLIAM HALE-WHITE's biography.

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[2] THE LANCET, 1894, i., 1111.

[3] Tuberkulose als Schicksal. By Dr. Erich Ebstein. With an introduction by Georg B. Gruber. Stuttgart: Ferdinand Enke. 1932. Pp. 184. RM.6.50.

The character sketches are set out in a scholarly shion, with due references to authorities and proof the diagnosis of tuberculosis wherever this is btainable. All of them are free from sentientality and none strives after emotional effect. hile this is a book which physicians will be glad possess, we trust it will find no imitators. To ave these things faithfully recorded once is ough.

PREPARATION FOR MARRIAGE

When, seven years ago, the National Society r Combating Venereal Diseases decided to become he British Social Hygiene Council the change of ame signified more than the expansion of the reventive aspect of their activities. It was the tcome of a growing conviction that neither enereal disease, nor any other evil associated ith ignorance of the ethics and æsthetics of sex, ill be eliminated until a higher standard of x conduct can be achieved. Both the common enereal diseases are contagious, and the first sk in the successful organisation of a campaign o check their spread had to be the breaking down the assumption, then generally held by the he public, that the primary duty of the family ractitioner was to hush up their incidence, and he secondary to take such discreet steps as would elp the patient back to health, if this could be one, without betraying his guilt or ill-luck. It is ecoming unfashionable now to blame the Victorians r an attitude of reticence about matters of sex o which many wish to return: but reaction against ost-war freedom of speech and action will hardly e allowed to mask the discoveries, physiological nd psychological, which have changed the outlook f educated men, and especially women, towards sex fe. These have not hitherto been embodied in text-books designed for the laity, nor are they easy o define or explain; but the British Social ygiene Council have now, with logical courage, ursued their study from the problems of dolescence to the adjustments required from person of either sex who contemplates marriage. In a foreword to a handbook[1] which has been repared by a special committee on behalf of the Council, the Bishop of Liverpool points out that many marriages have been wrecked, and others made less successful than they might have been, for lack of knowledge which some married folks never possess and others learn too late. The book as originally planned was to be a symposium of the views of different specialists: but the result proved to be a collection of essays which lacked cohesion, and had the even more serious defect of a chilly detachment from the difficulties which beset individual men and women.

It was therefore decided to entrust the collation of material to an editor who, while aiming at an unprejudiced exposition, admits the difficulty in a disarming preliminary chapter. Mr. Kenneth Walker sets out with candour and precision such of his personal reactions as may help the reader to assess and discount his bias, and proceeds to discuss in order the place of marriage in human life, the essentials of marriage and family, courtship, sexual intercourse, adjustment in marriage, children, fertility and sterility, birth control, continence, and aberrations of sex. A last chapter is headed Advice to Advisers, and is followed by a glossary of scientific terms, a classified bibliography, and a full index. The desire to provide a basis broad enough to make the work acceptable in widely different circles has limited its scope, but a constructive philosophy remains. For example, the theory that mankind has ever been free to give play to his sexual instincts untrammelled by social restrictions is held to be unsupported by anthropological research; the sad idea of the woman as the passive and enduring partner in sexual relations is dismissed as obsolescent; and the family is hailed as the accepted ideal of a social unit, whose stability is essential to the preservation of human society. Respect for the family is indeed the theme which pervades the work. Thus, the widespread taboo against incest is traced, not to eugenic considerations, but to the need felt by nearly all peoples to prevent the disintegration of the family, sexual interest between its members being incompatible with the emotional and social bonds on which its cohesion depends. The section on courtship includes a pertinent discussion of the disappointments associated with trial marriages and with temporary unions among the intellectuals—a self-attributed nickname. Jealousy and possessiveness, which by mutual compact had been excluded from the ménage, suddenly appear, and complete freedom of action without emotional conflict is found in practice to be impossible.

In such a well-balanced survey a few unimportant exaggerations are regrettable. For example, the facts that certain occupations under the government are closed to married women, or that the income-tax paid by two unmarried persons is less than that paid on the joint income of man and wife are hardly likely to cause a significant increase, for purely economic reasons, in the number of illicit unions among couples who would otherwise marry; and the generalisation that "men move slowly along the road of reason; women, like arrows, fly straight to the mark" sounds like a breath from a pre-Freudian world. But such anachronisms are rare, and the work will be welcomed as a printed exposition of ascertained facts and of recognised gaps in our knowledge. It is shaped to supply accepted information rather than material for promotion of any cult or code, and some sections, notably those on heredity and fertility, fulfil this aim; in others, for example, those on continence or sex aberration, the positive knowledge at present available is too meagre to afford the basis for useful advice unless the reader can supplement it from his own spiritual or worldly experience. This very limitation shows the real scope and value of this work. It will be useful to those who have a strong urge to give help and advice, and are already partially equipped to do so.

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[1] Preparation for Marriage. A handbook prepared by a special committee on behalf of the British Social Hygiene Council. Edited by Kenneth Walker, F.R.C.S. London: Jonathan Cape. 1932. Pp. 1931. 5s.

ANNOTATIONS

THE I.M.S.

THE annual dinner of the Indian Medical Service this year was in the nature of a dramatic function, for it was presided over by the Director-General of the Service, Major-General J. W. D. Megaw in England on leave, and attended, as principal guest, by Sir Samuel Hoare, the Secretary of State for India. These two high officials spoke without reserve on how things are with the much discussed Service, and on how things may be with it, and with the vast Empire to which it ministers, in the days to come. And the message which they delivered from their different angles was one of reasoned optimism. The Service is obtaining excellent recruits, good relations obtain between the Indian and the European members of the Service, and their united front is everywhere resisting the innumerable attacks of disease. When General Megaw said the problem of India was essentially biological he was being literal not epigrammatic, and when Sir Samuel Hoare prophesied that the future benefits to be conferred on India by scientific medicine would rival the benefits of the past he was not rhetorical but speaking from figures.

ESSENTIAL HÆMATURIA

THE condition described as essential hæmaturia, although unsatisfactory from the point of view of diagnosis, is always of interest clinically. A paper by Guy L. Hunner [1] presents his original views and deals briefly with the relationship of ureteral stricture to hæmaturia in general. Of a series of 200 cases of hæmaturia, he says, stricture of the ureter was found in 174, while in 22 ureteric examination was not made because the bleeding was from the bladder or because investigation was refused; in the remaining four cases no ureteric stricture was discovered. Of the 174 cases with ureteral stricture other possible or probable causes of hæmaturia were found as follows: stone in the upper urinary tract 37, tuberculosis 8, renal tumour 2, elusive ulcer 13, and pyogenic cystitis or ulcer 15, thus reducing the number of cases to 99. This list is further reduced to 27, "as representing those patients whose bleeding was so profuse or so prolonged that the most critical could not deny them the usual classification under idiopathic or essential hæmaturia." Hunner believes that these cases are almost all due to ureteral stricture with its common background of focal infection. He attributes the bleeding to a pyelovenous backflow caused by the stricture, and possibly due to rupture of one of the large veins of the inner arcuate system. The prompt cessation of bleeding as soon as dilatation gives good ureteral drainage supports the relationship between stricture and hæmorrhage, and corresponds with experimental work showing that the relief of pressure is rarely, if ever, followed by hæmorrhage. In 18 of the 27 cases of essential hæmaturia the results obtained from ureteral dilatation and attention to local infection were ideal, and most of the remaining nine were definitely improved. Apart from essential hæmaturia, the belief is expressed that hydronephrosis, renal infections, renal and ureteral calculus, and renal tuberculosis are all largely due to a ureteral stricture. In considering the whole 174 cases of ureteric stricture with hæmaturia, only two were without other symptoms. The commonest of the associated complaints were of bladder symptoms, pain in the region of the kidney, pain in the lower pelvis, backache, and gastro-intestinal symptoms; these symptoms were usually relieved by ureteral dilatation. Hunner mentioned that in the past leading urologists had shown indifference to his work, but in the discussion following his paper it was highly spoken of by N. P. Rathbun and H. S. Jeck, and by O. S. Lowsley, who had himself suffered from ureteral stricture and been relieved by dilatation.

SCOTTISH HOSPITAL SERVICES

NOT the least interesting and, at this time of transition, not the least important section of the report [1] of the Department of Health for Scotland, covering the year 1931, is that which deals with the hospital services in that country. When the department came to consider the application of the Local Government (Scotland) Act of 1929 it was at once faced with the urgent need of coordination between the hospital activities of neighbouring authorities. Under the old system of local government there were in Scotland well over 1000 potential hospital authorities, ranging from county to parish councils, and a survey of the ground left an irresistible impression of the wastefulness of the present distribution of institutions in scattered units, too small to support a proper equipment of staff and material, and multiplying overhead charges. One of the worst results is that in some areas where a poor-house is jointly controlled by a number of authorities in combination, the medical work has remained in isolation, more or less completely dissociated from the public health organisation of any of the combined authorities, and only vaguely associated, if associated at all, with the responsibility of any medical officer of health.

The obvious remedy for this highly unsatisfactory state of things is to select for development such of the existing hospitals as are suitable for expansion with regard to situation and local possibilities, including accessibility to specialists and general practitioners. It is pointed out that this does not necessarily imply the closing of small hospitals which cannot justifiably be developed. They may continue to be used pending enlargements elsewhere, employed temporarily for convalescents, as children's homes, or for chronic or other sick persons now accommodated in mixed poor-houses. In these poor-houses the standard of treatment is low. The buildings are out of date, lighting, warming, and ventilation are defective, while the mixture of purposes served in such institutions produces "difficulties almost insuperable." Since their occupants have now to be lifted out of the poor-law and given the benefits of the whole hospital service of the area, there will have to be removals to appropriate hospitals, with the result that, in time, the poor-house hospital will cease to exist. Meanwhile, it is suggested that the medical officer of one of the combined authorities should exercise general administrative supervision as a means of remedying existing defects.

This work of comprehension and coördination must necessarily occupy much time, but the department is planning on wide lines with a view to every development embracing the whole hospital policy, not only of the council immediately concerned but usually of the councils of neighbouring areas. It is stated emphatically that the proposals of any town or county council must be related to the needs of the adjacent areas. Thus, not only are large units secured, but the facilities ovided by the voluntary hospitals are carefully ken into account. Even where local authorities ive powers of reorganisation and expansion under d statutes which absolve them from the requirement formal consultations with the voluntary institutions, ey are nevertheless being advised to observe the tter of Section 27 of the 1929 Act. The report, which cludes an account of the progress already made wards getting the new system to work, insists rongly upon the necessity for coöperation with the luntary hospitals for many purposes, "including edical teaching and research." No harm would ive been done by an even more pronounced insistence on this point, in view of the rapidly growing portance of that preventive and curative work which based upon research in the hospital laboratory.

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[1] Amer. Jour. of Surg., May, 1932, p. 279.

[1] See THE LANCET, June 11th, p. 1281.

PROSTATIC TECHNIQUE

Urologists are making every effort to remove ostatectomy from the category of septic operations, d a paper by Mr. H. P. Devine [1] contains many luable suggestions about how this may be done. e points out that the dangers of sepsis and hæmorage are partly due to the fact that the prostate shelled out blindly rather than dissected away om its bed. If, however, a satisfactory approach obtained, there is no reason why the prostate ould not be dissected away, with vessels tied as ey are divided, torn mucous membrane removed, d the cuff of divided mucous membrane sutured the prostatic bed. In order that this operation ay be carried out, he uses the well-known retractor earing his name, which has been modified especially fit the needs of prostatic and bladder surgery. wo of the blades which hold the bladder wall apart re fitted with small lamps placed in the middle of poons; these spoons serve both as reflectors and etractors. During the operation the blood is drawn way through a suction tube fixed to the frame and erminating in the lowest spoon. By this means and ith the patient in the exaggerated Trendelenburg osition, the removal of a prostate can be easily arried out under full visual control. In order that epsis may be avoided, changes must be effected not nly in operative but in post-operative technique. he latter usually suffers from the disadvantage hat continuous contact of the wound with urine nterferes with the process of healing. Therefore in he post-operative treatment of prostatectomy every ffort should be made to have as little urine as ossible in contact with the prostatic cavity. To chieve this, a rubber tube with many perforations n its lower end is inserted as far as the cavity. Into his is fitted a smaller metal tube, whose end is lowered ntil it is just touching the mucosa. This aspirating ube is kept in position by means of an adjustable crew on a circular metal plate lying over the abdomen. Suction is provided by a water pump attached to a urface tube. After seven or eight days, when the pace of Retzius is sealed off, the end of the aspirating tube is raised so as to lie just within the bladder. By these means Devine claims that it is possible to keep the bladder free from urine till granulation tissue has formed to provide a protection for the prostatic wound. The great quantity of air which is aspirated over the wounds assists in keeping them dry, clean, and healthy. He states that this method has been in routine use for over 15 years, and that practically it has been found to be a great advance in prostatic technique. The only criticism that can be made of it is that aspiration methods require a great deal of attention, and that what is undoubtedly excellent in theory sometimes breaks down in a busy hospital practice.

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[1] Australian and New Zealand Jour. of Surg., March, 1932.

SANATORIUMS OR "TUBERCULOSIS HOMES"?

The comparative merits of the different forms of tuberculosis institution are being keenly debated at the present time in Norway, where two main types already exist. The one is represented by the large sanatoriums staffed by specialists, the other by the numerous small "tuberculosis homes" which are dotted all over the country. The latter are usually in the charge of a non-resident doctor, the local medical officer of health, or some equivalent. These unpretentious homes cost comparatively little per bed, and they are an invaluable refuge to patients who are in an advanced and incurable stage of the disease, and who wish to spend their latter days near home, without being a burden or danger to friends and relations. The homes have, in fact, become such a valuable and integral part of the administrative tuberculosis machinery in Norway that some of their over-zealous friends have been tempted to set them up as competitors of, instead of as auxiliaries to, the large sanatorium, the building and running of which is undoubtedly costly. A corrective to this movement is to be found in a singularly convincing and logical exposé by Dr. Cathrine Hambro.[1] As she points out, treatment of the tuberculous has the double aim of rendering them fit for work and non-infectious; it is by these two standards that the efficacy of any therapeutic system must be judged. To form an estimate of the value of treatment by specialists in a sanatorium, she has studied the records of 205 patients given sanatorium treatment between 1925 and 1928 and kept under observation, with only about five exceptions, till January, 1932. All, with three exceptions, were sputum-positive, and all were selected for pneumothorax treatment. It could not be carried out in 45 cases, and not more than one of these 45 patients achieved both fitness for work and non-infectiousness—this only after prolonged conservative treatment. Among the 160 patients in whom a pneumothorax could be induced, there were as many as 63 who ceased to be infectious and achieved complete fitness for work. Another 20 also ceased to be infectious and achieved a certain degree of fitness for work. Three other patients ceased to be infectious, but could not work. It will thus be seen that more than 50 per cent. of these pneumothorax-treated patients were restored to complete or partial fitness for work, and had ceased to be dangerous to their surroundings. Tuberculosis homes do not and, according to Dr. Hambro, should not attempt such therapeutic results. They should rather be clearing stations from which suitable potential pneumothorax cases should be sent to the large sanatoriums. It has, however, been suggested that the visiting physicians attached to tuberculosis homes should qualify themselves in artificial pneumothorax technique by a residence of six months at a sanatorium. Dr. Hambro is very doubtful as to the standard of efficiency likely to be reached by such a six months' stay; and (what is even more important) the medical officer of health who would like to convert his 40-bed tuberculosis home into a pneumothorax-inducing sanatorium would find an average of three hours work a day not too much for the needs of his institution. Few medical officers of health could possibly spare so much time in view of the many other claims upon them. Dr. Hambro concludes that Norway is probably sufficiently well provided with children's homes, and more or less adequately with tuberculosis homes, whereas the shortage of public sanatorium beds entails a delay of three or four months on the waiting lists. There is not, in fact, half a sanatorium bed for every yearly death from pulmonary tuberculosis. The solutions which Norway will ultimately find to these administrative problems will assuredly be of interest to the world at large, for most countries are at present facing the same or similar problems.

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[1] Tidsskrift f. d. Norske Laegeforening, May 1st, 1932.

DANGEROUS DRUG TRAFFIC IN EGYPT

Within the last three years, under T. W. Russell Pasha's direction, the Central Narcotics Intelligence Bureau of the Egyptian Government has shown how much can be accomplished, both nationally and internationally, with zeal and determination in exposing and restricting illicit trade in drugs of addiction. It was reported to the last meeting of the Advisory Committee on Opium at Geneva that while in 1928–29 there were some 500,000 addicts among a population of 14,000,000 there are now fewer than 150,000; while convictions for offences under the Narcotics Act have fallen from 10,294 in 1930 to 5571 in 1931. Heroin is no longer imported in bulk into Egypt, though a large number of small consignments are still introduced. Hashish, which has only recently been added to the list of dangerous drugs, nevertheless claims many victims, and it is estimated that there are in Egypt no fewer than 282,000 hashish addicts! Russell Pasha has repeatedly called attention to the fact that under Egyptian legislation traffickers of foreign nationality cannot be proceeded against, otherwise the illicit traffic in that country would, he holds, by now have been very largely reduced. One of his most striking coups has been the conviction on June 15th of Mohamed Mustapha Nafei, the head of the greatest and most unscrupulous of the smuggling organisations in the Levant. His agents were widespread, ships and motor-cars conveyed the contraband goods to hiding places for storage, a chemical laboratory was maintained at Cairo, respectable capitalists were inveigled into the business, and police and soldiers had been bribed and corrupted. Caught at last, Mohamed Mustapha Nafei was sentenced to five years' imprisonment and fined £E.1000, while four of his confederates at the same time received similar exemplary sentences. Russell Pasha has set an example to some of the more lethargic signatories of the opium conventions in combating what he has termed "the ghastly side of narcotic addiction."

HERTZIAN-WAVE THERAPY

A method of procuring thermotherapy which has been little tried in this country is the use of short electro-magnetic (Hertzian) waves. Their action on the body and indications for their application are set out in a monograph[1] by Drs. J. Saidman and R. Cahen, in which the physical and electro-technical principles underlying the production of currents of extremely high frequency through the agency of the triode valve are enunciated. The authors regard most of the biological effects that follow exposure of the body to short Hertzian waves as due to the heat produced in the tissues, but they discuss the possibility of some other action of the waves and speak of their "quasi-specific" action in the treatment of the pain accompanying neuritis and neuralgia. The use of these waves in the production of the so-called therapeutic fever and the treatment of general paralysis is described. The technique does not seem to be elaborate.

When the current from the ordinary diathermy machine is employed for heating the tissues the electrodes are placed in contact with the body. If, however, the machine is constructed to produce current of much higher frequency the electrodes can be covered with insulating material and placed at a little distance from the body; the region of the body between the electrodes will be heated. The rise of temperature is attributed to the action of the short electro-magnetic waves to which the tissues are subjected. Those who are interested in the progress of diathermy and diathermotherapy will want to know what may be gained by the use of electro-magnetic waves for the purpose of heating the body and treating disease. The authors maintain that the deep regions can be heated to a higher degree than that which can be obtained with the diathermy current, and suggest that the biological effects brought about by the waves are *not wholly due to the production of heat*. The fact that the deep-lying organs of the abdomen can be heated only very slightly by the diathermy current is recognised, but absolute proof that they are heated by these waves has not yet been obtained and it would be even more difficult to prove the thesis that the biological effects of exposure to electro-magnetic waves are due, in part, to some physical change other than the elevation of the temperature of the tissues. One advantage of the employment of the waves in place of the diathermy current is however evident. The electrodes can be applied over the clothes. This not only saves the time spent in arranging electrodes in perfect apposition with the uncovered skin, but avoids much of the risk that some movement on the part of the patient under treatment may cause accidental burns.

FULTON'S BIBLIOGRAPHY OF ROBERT BOYLE

As R. T. Gunther pointed out in "Early Science on Oxford," medicine owes more than can be readily defined to Robert Boyle for his influence in establishing a proper physical and chemical basis for the study of the human body in health and disease. Though much in Oxford from 1654 to 1668 and a leading spirit in its Philosophical Society, he was never a "gown-man" there. But in 1665 he was created a Doctor of Physic, he endowed an annual lecture in defence of natural and revealed religion, and his name is further kept green by the Robert Boyle lecture, founded in 1892 by the Oxford University Junior Scientific Club. It is therefore fitting that at Oxford the University Press, under the guidance of her Biographical Society, should bring out the scholarly and fascinating "Bibliography of the Honourable Robert Boyle"[1] which, after collecting for eight years the early editions of these works, Dr. J. F. Fulton, sometime Fellow of Magdalen College, Oxford, and now Professor of Physiology at Yale, has compiled. It contains 250 items of Boyle's works, a section on works dedicated to him, including Joseph Needham's "The Sceptical Biologist" (1930), his funeral sermon and elegies, his biographies and the criticisms and commentaries made about him. The formal list of Boyle's publications and their various editions is generously illustrated by photographic facsimiles ie title pages, and is accompanied by explanatory extremely interesting descriptions. In an actively modest preface the difficulties inherent ompiling a seventeenth century scientific biblio- hy are confessed, and the method which the lern bibliographer must adopt to obtain a result satisfies his conscience and ideals is revealed to reader. As the author remarks, "bibliography is ed an all-absorbing occupation, but its devotee is uently face to face with those who fail to under- ld the source of his enjoyment." This fine work, the splendid "Bibliotheca Osleriana" (1929), t earn the sincere gratitude of those interested in bibliography of medical science to the Oxford versity Press.

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[1] Les Ondes Hertziennes Courtes en Thérapeutique. By Jean Saidman, Director-fondateur de l'Institut d'Actinologie, and Roger Cahen, Chef de Laboratoire de l'Institut d'Actinologie. With preface by Prof. d'Arsonval. Paris: G. Doin et Cie. Pp. 135. Fr.35.

[1] Reprinted from the Oxford Bibliographical Society's Proceedings and Papers, vol. iii., part 1, pp. 1–172. Oxford University Press. 1932.

NOTHER ACTIVE CONSTITUENT OF ERGOT

REMARKABLE paper by Dr. Chassar Moir,[1] from obstetric unit of University College Hospital, cludes with the statement that there is a reasonable tainty that the characteristic action of ergot known the old obstetricians is due to a substance which a prompt and energetic action, and which is not otoxine, ergotamine, tyramine, or histamine; t, in fact, the ergot alkaloids, hitherto supposed be all-important, play but a subsidiary part in the ical action of the drug. This is an astonishing ling to those who have followed the controversy arding the activity of the B.P. extracts of ergot.

Nearly a quarter of a century ago, G. Barger and H. Carr isolated from ergot an alkaloid which y called ergotoxine, and which was believed to be ponsible for the only characteristic pharmaco- ical action of the drug. Later on, histamine and amine were found in ergot, but it was soon monstrated that these amines had no effect on the erus when given by mouth. The view has since been ongly pressed by pharmacologists that the processes which the pharmacopœial extracts of ergot were ade might have been conceived with the definite ject of ensuring that these extracts should contain ne of the only active principle peculiar to, and aracteristic of, the drug; the inference being that e B.P. extracts were absolutely inert and therefore eless. Clinical opinion demurred to this conclusion. seemed almost unbelievable that the watery extracts ed by clinicians for over a century, and concerning e efficacy of which there seemed to be convincing inical proof, should be valueless. But the work of Bourne and J. H. Burn[2] on the human parturient erus appeared to confirm the views of the pharmaco- gists that ergotoxine and ergotamine (an alkaloid olated by Stoll in 1920, closely related to ergotoxine, ough probably not chemically identical) were lely responsible for the therapeutic efficacy of any eparation of ergot, and that the watery extracts ere inactive. This view came to be generally cepted, except perhaps by those who were actually the habit of employing ergot in their practice; nd in the new pharmacopœia, to be published ortly, methods of extraction with acid alcohol re substituted for the old watery extracts, so as to nsure the presence of what were regarded as the ctive alkaloids. Now the whole controversy has aken a new turn.

Moir employed a modification of Bourne and Burn's ethod to obtain records in graphic form of the ontractions of the puerperal uterus. About the eventh day of the puerperium, a sterilised rubber bag is passed into the uterus, and connected by water-filled tubing to a mercury manometer. By means of a light float on the manometer variations of intra-uterine pressure are recorded on a slowly revolving drum. In this way, not only the spontaneous contractions of the puerperal uterus are clearly shown, but also the variations of activity brought about by suckling or by the administration of drugs. Moir demonstrates that while both ergotoxine and ergotamine are active in stimulating contractions of the puerperal uterus, they are comparatively slow in taking effect, requiring 15 to 45 minutes after intra-muscular injection, and 35 to 40 minutes or longer when given by mouth. Furthermore, their action when given orally is erratic. On the other hand, the administration by mouth of different samples of the B.P. 1914 Ext. ergotæ liq. in 2-drachm doses and of the Ext. ergotæ in grs. 10 doses, results within a few minutes in marked activity of the puerperal uterus, the tone of which is also increased to an extent much greater than that seen with any other oxytocic drug. The rapid effect demonstrated in this way is in entire agreement with recorded clinical facts. Ergot could never have had a place in obstetrics had its action not been swift and powerful. It would appear also that these extracts have remarkable keeping properties, samples known to have been kept in a partly used stock bottle with a cork stopper for more than 15 months being still very active. It is difficult to resist the conclusion that the characteristic and traditional effect of ergot is due to a substance as yet unidentified, and that the clinicians who maintained that watery extracts of ergot were useful were entirely right. It should be a warning to the laboratory worker not to be too severe in his criticism of clinical observation, which might be as accurate as his own. Fortunately, by what may be described as a happy fluke, the alcoholic ergot extract of the new B.P. appears to be as active as the watery extract of the old B.P., when given by mouth.

ANÆSTHETICS AND THE MIDWIFE

THE demand among women of all classes that they shall know as little as possible of the pains of childbirth appears to be increasing, but at present the women whose labour is conducted in their own homes by midwives can expect little relief from pain even at the stage of actual delivery. The suggestion that small doses of chloroform should be put up in capsules and used for this purpose was made recently by Miss E. M. Pye,[1] president of the Midwives Institute. Each capsule contains ♏xx of chloroform and is enclosed in a roll of gauze; it can be crushed between the fingers so that the chloroform soaks into the gauze roll. One capsule tucked into the side of a mask is said to be sufficient to secure analgesia for 7 to 10 minutes. Mr. Rivett, who has given the capsules extensive trial both at Queen Charlotte's and the Middlesex Hospitals, allows their use early in the first stage of labour. The patient sniffs the mask whenever she feels a pain beginning, and a very small quantity of chloroform—"little more than the smell of it," in Mr. Rivett's experience—suffices to procure analgesia. No attempt is made to induce surgical anæsthesia; the patient remains conscious of the contractions, but these are painless. At a meeting of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine (reported on p. 1361), at which Mr. Rivett described the success obtained with the capsules, several

speakers suggested that the action of chloroform, used in such a way, was largely psychological. Mr. Eardley Holland is able to achieve a similar happy result during the first stage of labour by reassurance, persuasion, and grs. 40 of chloral; and he deprecates the prolonged use of chloroform, even in such small dosage. Most speakers, however, seemed to think the capsules harmless enough, though some feared to place a drug as dangerous as chloroform in the hands of the midwife. Dr. Fairbairn, president of the Central Midwives Board, expressed interest in the device, and the opinion of the Section of Anæsthetics of the Royal Society of Medicine is being enlisted on the question whether midwives, after preliminary training, could safely be trusted with the capsules.

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[1] Brit. Med. Jour., June 18th, p. 1119.

[2] Jour. Obst. and Gyn., 1927, xxxiv., 249.

[1] See THE LANCET, April 2nd, p. 727.

ANOTHER CLINIC FOR THE "NERVOUS" CHILD

THE movement towards the rational treatment of the so-called "nervous" or difficult child has been gaining ground through the pioneer work of a variety of organisations throughout the country. In London alone we have one under the auspices of the Child Guidance Council of Great Britain, the East London Child Guidance Clinic of the Jewish Health Organisation, a special department at the Institute of Medical Psychology, and the National Institute of Child Psychology; while Guy's Hospital, the Children's Hospital, Great Ormond-street, University College Hospital, and Maudsley Hospital each have departments devoted to this work. The two first mentioned, and those in Birmingham and Liverpool, are planned on the American system of a clearly defined unit of psychiatrist, psychologist, and social worker who deal with the cases in close collaboration. The others are mostly equipped with the same basic staff, but the unit is closely organised and is related to the hospital to which each is attached. The West End Hospital for Nervous Diseases now proposes to establish a similar unit in the autumn, to which members of the hospital staff will be able to refer cases for special treatment, though cases will also be accepted from other sources. This will mean that not only will those "nervous" and difficult children be seen who have been diagnosed as free from organic disease, but that such organically afflicted children as have behaviour sequelæ will be considered for psychological assessment (intelligence estimation, and so forth), and perhaps for treatment too. Observation beds will be available. This venture is of interest in that, for the first time, a hospital for organic nervous diseases is considering the more psychological aspects of child disorders on modern lines.

Clinics that are not directly associated with hospitals tend to attract a large number of cases of the "behaviour" type, largely from the schools. The cases are chosen in consequence of the teachers' attitude and the demands of school life, its curriculum and its discipline. Such clinics may fail to attract the attention of medical practitioners, or may not win their confidence because of the fear of entanglements with new theories away from the beaten track of medical tradition. It is important that such fears should be dispelled, but this will be only a gradual process. Meanwhile, the advantage of the West End Hospital clinic may lie in the fact that most doctors have, through tradition, associated disorders of behaviour and emotion with the action of the nervous system in the widest sense, despite the fact that disturbances in other systems are not without their psychological implications. It is, moreover, an admission that while careful differential diagnosis of nervous disorder is the first requisite, treatment must follow on specific lines, psychological and perhaps sociological. The fact that London is now being rapidly provided with a variety of children's clinics, bearing a basic resemblance to each other in the recognition of the need for medical, psychological, and sociological investigation, is satisfactory; and since each is related to different hospitals and different forms of psychological or psychiatric organisation, their study of behaviour and emotional disorders in children will soon be approached from many fresh angles.

A GROWTH-PROMOTING FACTOR

IN a paper presented to the Biochemical Society on June 11th, Mr. L. W. Mapson, of Cambridge, stated[1] that fresh ox liver has been shown to contain a substance which stimulates the growth of rats, maintained on a full synthetic diet, to approximately twice the normal rate. This accelerative growth-response is relatively more marked in the male than in the female. It has been transmitted from parent to offspring by the feeding of liver to the parents, and the stimulation of growth is greater under these conditions than when the liver is fed directly to the young. This growth-promoting principle, according to Mapson's observations, is distinct from hitherto known accessory food factors. Preliminary investigations show that it is soluble in water and is not precipitated by high alcohol concentrations. Commercial liver extracts such as Eli Lilley No. 343 contain only traces of it. A beneficial effect of feeding fresh ox liver has also been noted in connexion with lactation; 30 per cent. only of the control animals succeeded in the rearing of their offspring, whereas no such failure of lactation occurred in those litters whose parents received liver in supplement to the basal diet. Evidence of some stimulation of ovarian activity by the feeding of liver is indicated by the readiness with which the animals breed and the increased numbers of young born in the liver-fed litters. Whether the substance active in promoting the growth rate is identical with that stimulating lactation remains to be determined, and a fuller account of the work is shortly to be published.

THE X Ray and Radium Protection Committee is making an inquiry into the blood changes which occur in workers in radiological departments. Sir Humphry Rolleston (chairman), and Prof. Sidney Russ and Dr. Stanley Melville (hon. secretaries) have issued to hospitals a questionnaire inviting information. Copies may be had from Dr. Melville at 9, Chandos-street, London, W.1.

IT is announced that Sir John Marnoch is retiring on Sept. 30th from the Regius chair of surgery in the University of Aberdeen.

Miss Ruth Darwin has been appointed a senior commissioner of the Board of Control, in succession to Mrs. Ellen F. Pinsent, who will retire on July 31st. Mrs. Pinsent was an honorary commissioner from 1913 to 1920 and a commissioner from 1921 to 1930; she has been a senior commissioner since Jan. 1st, 1931, when the Board was recognised under the Mental Treatment Act. Miss Darwin, who is a daughter of the late Sir Horace Darwin, was an honorary commissioner from 1920 to 1930, and has been a commissioner since 1931.

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[1] Jour. Soc. Chem. Industry, 1932, li., 535.

SPECIAL ARTICLES

WHAT IS WRONG WITH THE MEDICAL CURRICULUM?

Series of Opinions Contributed by Request)

III

G. GREY TURNER, M.S., F.R.C.S., F.A.C.S.
FESSOR OF SURGERY IN THE UNIVERSITY OF DURHAM

is perhaps easy to criticise the medical
ulum from a general point of view, but more
lt to do so from the point of view of the subject
hich one has special responsibility. It is so
to say that the student spends far too much
in other departments, and so difficult to admit
his duties could be lightened in one's own
t. The time in the curriculum at which the
nt starts his clinical work is always a moot
, and I cannot personally see why he should
et some introduction to hospital life at a much
r period. To defend this thesis would lead one
spass on the domain of the anatomist and physio-
, but I venture to say that an unnecessary
nt of time is spent in the actual work of dissecting
n the study of the minutiæ of anatomy, and that
at deal of physiology could be much better
t on the living human subject than in the
exclusive atmosphere of the laboratory. Truly
erful "experiments" are carried out every day
e surgical wards and provide opportunities for
tudy of living processes on the human being.
could be easily observed if only this work
organised and it was someone's business, with
ledge and time, to direct its manifold lessons
the proper channel of the student's mind.
tless those in charge of hospital beds could utilise
of these opportunities and carry the student's
ledge of the Institutes of Medicine into the
al sphere; but there is always the unhappy
of these days, and in the surgical wards the
tant drain on the time and energy of the surgeon
he insistent claims of the operating theatres.

INITIATION

the outset I would like to utter a protest against
tudent's time-table being too much cut and dried
he first enters hospital with set classes and
onstrations which he must attend in order to be
d up. I have always thought that during the
three months of clinical study the student ought
e allowed to go anywhere and everywhere, and
ave the opportunity to wander around the strange
of a hospital, and to follow his own interests
whatever department they may lead. In this
he will take a peep at injury and disease from all
ts of view, and will learn to find his way about the
g body much as he learned to find his way about
dead body in the dissecting room. He will also see
h, and in the post-mortem room he can, even at
stage, roughly correlate the condition of the quick
the dead. During this formative period he
ld keep a note of what he sees, and should read
those particular things in the excellent text-books
ch are available, rather than attempt from the
inning to learn his work by a course of systematic
ling so many pages a day. It would be a good
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SPECIAL ARTICLES

WHAT IS WRONG WITH THE MEDICAL CURRICULUM?

(A Series of Opinions Contributed by Request)

III

G. GREY TURNER, M.S., F.R.C.S., F.A.C.S.
ROFESSOR OF SURGERY IN THE UNIVERSITY OF DURHAM

It is perhaps easy to criticise the medical riculum from a general point of view, but more ficult to do so from the point of view of the subject which one has special responsibility. It is so y to say that the student spends far too much e in other departments, and so difficult to admit t his duties could be lightened in one's own bject. The time in the curriculum at which the dent starts his clinical work is always a moot nt, and I cannot personally see why he should t get some introduction to hospital life at a much lier period. To defend this thesis would lead one trespass on the domain of the anatomist and physio- ist, but I venture to say that an unnecessary ount of time is spent in the actual work of dissecting d in the study of the minutiæ of anatomy, and that great deal of physiology could be much better ght on the living human subject than in the re exclusive atmosphere of the laboratory. Truly nderful "experiments" are carried out every day the surgical wards and provide opportunities for e study of living processes on the human being. hese could be easily observed if only this work re organised and it was someone's business, with owledge and time, to direct its manifold lessons to the proper channel of the student's mind. ubtless those in charge of hospital beds could utilise ny of these opportunities and carry the student's owledge of the Institutes of Medicine into the nical sphere; but there is always the unhappy sh of these days, and in the surgical wards the nstant drain on the time and energy of the surgeon y the insistent claims of the operating theatres.

INITIATION

At the outset I would like to utter a protest against e student's time-table being too much cut and dried hen he first enters hospital with set classes and nonstrations which he must attend in order to be gned up. I have always thought that during the st three months of clinical study the student ought be allowed to go anywhere and everywhere, and have the opportunity to wander around the strange nd of a hospital, and to follow his own interests o whatever department they may lead. In this ay he will take a peep at injury and disease from all ints of view, and will learn to find his way about the ing body much as he learned to find his way about e dead body in the dissecting room. He will also see ath, and in the post-mortem room he can, even at his stage, roughly correlate the condition of the quick th the dead. During this formative period he ould keep a note of what he sees, and should read those particular things in the excellent text-books ich are available, rather than attempt from the ginning to learn his work by a course of systematic ading so many pages a day. It would be a good ing if, in these early days, he could hear something the history of his art, not formal teaching but enough to whet his appetite and to make him familiar with the great names. After that period has passed, the student may start his appointments and, so far as surgery is concerned, I would most emphatically say that the post of dresser is an admirable education, and that the period of dressership is none too long and need never be wasted. It is the nearest approach to an apprenticeship which is now feasible. During this time the student is not only being taught, but is learning to teach himself, and in the daily contact with the sick he gets an intimate introduction to what must be his life's work. He becomes inoculated with the hospital spirit, becomes part of a humanitarian machine, and helps to keep ajar the ever open door.

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MEDICINE AND THE LAW

A Surgeon's Authority to Operate

In the High Court last week Mrs. Cull brought action against the Royal Surrey County Hospital, ildford, and Mr. H. B. Butler, the surgeon in rge of its gynæcological department. She alleged gligence, breach of contract, and trespass to the son.

Mrs. Cull suffered from epileptic fits. According her evidence she was now 32 years old. one of a ily of eight children all alive and healthy, her rents being also alive and healthy. At 14 years age she had a fit which she attributed to a paper g being burst on her head. Thenceforward she d epileptic fits at intervals of from 12 to 18 months. e married at 20, and had a child, now aged 11 years, lthy and strong. A second child was born in 22. but died of pneumonia at 10 months. Her bsequent medical history appears from the evidence Dr. Gordon Cranstoun, of Worplesdon, her medical endant. He first attended her during a pregnancy 1928; she was then suffering badly from fits, ich became worse towards the end of her time: e child was born dead. In 1929 she and her husnd consulted Dr. Cranstoun as to the advisability any future pregnancy. He advised against it; egnancy caused her epileptic condition to become rse. In October, 1929. she was again pregnant. e told him her health was worse and her fits were d, and hoped the pregnancy could be terminated. e suggested a consultation with Mr. Butler, who vised removal of the uterus. Dr. Cranstoun plained the position to Mr. and Mrs. Cull. Later . Cull told him they had decided against the ajor operation. and preferred the minor operation curetting. because Mr. Cull had to go away to the ld Coast on duty, and could not leave his wife to dergo the major operation in his absence. Dr. anstoun replied that, if the pregnancy were thus minated, it could not be regarded as a matter of nvenience; there must be no more pregnancies. . Cull assured him that there should be no future gnancy.

The patient was admitted to the Royal Surrey unty Hospital. and Dr. Cranstoun wrote a letter the hospital conveying her decision not to undergo e major operation. Though this communication ached the hospital it was never brought to the geon's notice; it was attached to the "in-patient's ter" referring to Mrs. Cull and was filed. In the mission book the words "for curettage" were tered under the heading "Disease." The admisn form, destroyed in the ordinary routine. had parently specified "need for uterine curettage." the operation Mr. Butler removed the uterus. terwards, said Dr. Cranstoun, Mrs. Cull did not otest about what had been done, nor did she press regret or annoyance. It was put to him in s-examination that the fits had since become rse, but he declined to attribute this to the operan. Epilepsy, he said, is a progressive disease. d. moreover, the strain of the present litigation uld have a bad effect on the patient.

If Dr. Cranstoun's evidence were accepted—and seems to have been in no way shaken by crossamination or otherwise—the merits and substance Mrs. Cull's claim were obviously diminished. ere had been references to the desire of Mr. and s. Cull to have another child. and to the disaster Mrs. Cull's disability; if her husband had already undertaken, under medical advice, that there should be no future pregnancy, these references lost their forensic value. Mr. Butler, who was described by the Lord Chief Justice as a frank and candid witness. described his first examination of Mrs. Cull; he said he gathered she was terrified by the experience of her former pregnancies. and dreaded the continuance of the existing one; he came to the conclusion that the pregnancy ought to be removed and the patient sterilised. He agreed that the admission form bore the words "need for curettage"; he thought this must be a mistake; he could not imagine that, if there had been any disagreement with his advice. it would be conveyed by writing "need for curettage" on an admission form; he would have expected some proper means of indicating it. As he now knew, there was a proper document to this effect. but he never got the document. He himself went through the details of the case with the sister at the bedside, "including Mrs. Cull, as it were, in the conversation"; he did not remember Mrs. Cull making any remark. He admitted he was wrong in being satisfied, but these circumstances did satisfy him that the patient knew what he was going to do. He honestly believed Mrs. Cull was better off now; she was a woman who ought not to have another pregnancy. Further evidence was given for the defence by various witnesses. Mr. G. H. Steele, of Guildford, consulting surgeon to the hospital. said it would not have been proper to terminate Mrs. Cull's pregnancy in 1929 if there had been a prospect of a future pregnancy. Sir Henry Simson said that from the medical and eugenical point of view the patient certainly should not have had any more children: further pregnancies would have been a source of danger to her life and health; it was probable she would never have a healthy child. He had never heard it said that removal of the uterus made epilepsy worse; on the contrary, the operation had been recommended as a cure for epilepsy. Sir Farquhar Buzzard giving similar evidence said that the patient's medical history showed that she suffered from major epilepsy, and that pregnancy increased the epileptic condition; that tendency would be progressive. In his opinion the operation performed by Mr. Butler could not permanently affect the epilepsy. Sir Farquhar deprecated the marriage of epileptics; the only case in which an epileptic should marry was where, under treatment, there had been years of immunity.

In answer to specific questions left to them by the Lord Chief Justice, the jury found that there had been a negligent breach of contract by the hospital authorities. damages being assessed at £120. There had been trespass on the part of Mr. Butler, damages being assessed at the apparently contemptuous figure of one farthing. The jury added a rider that Mr. Butler's trespass was due to the hospital authorities' negligence. As £25 had been paid into court on behalf of Mr. Butler. the plaintiffs would ordinarily have to pay his costs. Lord Hewart has deferred his decision on the question of costs.

Spiritualism as a Subject of Libel

The legal requirement that an English jury should be unanimous must often encourage jurymen to compromise. The verdict in Mrs. Meurig Morris's action against the *Daily Mail* was possibly an instance of this tendency. Under the headline "Trance Medium found out," the defendant newspaper commented on Mrs. Morris's spiritualistic powers. When she sued for damages for libel. the defendants conditions which are of the greatest importance, and on conditions which, though important when they arise, are not so likely to be met with in the ordinary practice of the hospital during the comparatively brief period which the student spends in a medical school. These lectures, if given by someone with ample clinical experience, are really systematic surgery illustrated by reference to cases. I have never forgotten many valuable lessons conveyed in this way by my own teachers, and especially when in the form of a story around the history of an actual case.

Great stress should be laid on the ordinary methods of examination and in every case these should come first. I like to picture my students immured on some distant island, away from all institutions and modern apparatus, and to think that they at least by their training will be equipped to find out all that can be elucidated by the methods which have stood the test of time for so long. It is a good plan to educate the students to think of the ordinary things first, and gradually to work up to the more detailed and special examinations which may so often be required. Years ago I was horrified when a candidate in the final informed me that she had never made a rectal examination. This seemed to be so appalling a state of affairs that I now supply the students with a card on which is printed a list of all the ordinary minor procedures which they ought to have personally conducted. This is not for signing up purposes, but as a reminder to them of what they must see and do before they can consider that they have made full use of the abundant opportunities which are provided.

SURGICAL TECHNIQUE

In operative surgery my views are very decided, and I cannot but think that they must merit more or less general approval. It is quite impossible, even if it were thought desirable, to turn out ordinary graduates fully equipped to practise operative surgery in all its branches. But I feel that every student should have a clear grasp of surgical technique, both in all its broad principles and its essential details, and for a proper understanding of this important matter the story of Lister and his achievement is most helpful. They must also be well grounded in minor surgery, and in the great surgical emergencies which under any and varied circumstances may requiring life-saving operations. So far as the other methods of operative treatment are concerned, it is in my opinion quite unnecessary for the student to be burdened with any technical details whatever. I mind not at all whether they know the steps of gastrectomy, or of excision of the rectum, or division of the sensory root of the Gasserian ganglion, or the very many other major operations which ought only to be attempted by those who have undergone very special training, which must be post-graduate. But all who would qualify to practise should have a knowledge of the possibilities of operative treatment and some understanding of the indications for most surgical procedures. They should know something of the risks and of the results which may reasonably be expected, and incidentally they will learn, during their dressership, a good deal about the conduct of the after-treatment. Large numbers of our graduates will certainly take service under the panel system, and under that system the majority of minor surgical operations are supposed to be within the competence of any qualified medical man. That being so, it is part of their business to be equipped with knowledge of these minor procedures, or they are unfitted for the work which many of them contract to undertake.

TEACHING CENTRED ON THE PATIENT

I regret the wasted opportunities for teaching minor surgery which daily occur in all hospitals and I constantly tell my class that, so far as minor surgery is concerned, they may get very great credit from the successful conduct of some operation which in hospital may be looked upon as so trivial as to be beneath their notice. Again, I am frankly afraid of the tendency in modern teaching to rely on seemingly easy routes to learning, demonstrations that are much too dramatic, cinema shows, and even some lantern demonstrations, in which the student has only got to keep awake and to sit and look, but in which he takes no part. I know the temptation for I employ these methods, but they should only be used sparingly and mostly for senior students and post-graduates. With the abundant clinical materia which is available in most hospitals in this country it seems wicked to spend any time in teaching which is not centred around an actual patient. It is al very well to be able to demonstrate unusual conditions by graphic pictorial methods, but such demonstrations should surely be infrequent when there is so much that is ordinary that can be demonstrated at first hand. For this reason I think that clinica lectures should concern actual cases and, as far as possible, should be conducted around the patient I would also lay great stress on continuity in teaching and, as far as is possible, the student should see the case in the out-patient department, admitted to the wards, investigated, operated upon and sent out cured or otherwise, and any pathological specimens from the patient should be demonstrated to the students concerned. I suggest that a considerable amount of the student's time could be saved if it were not necessary to devote such close attention to pathological histology. Naked-eye pathology is of the greatest importance and on the surgical side canno be too much stressed, but nothing is so good as the study of specimens in connexion with the particular case to which they are related. Though a certain amount of pathological histology is essential, in actua practice in all but the simplest cases problems o microscopic diagnosis are nowadays submitted to those who specialise in this work, and no amount o training during the undergraduate period would make it possible for the young practitioner to be able to rely on his own opinion rather than that of experts in cases of difficulty. It is indeed entirely different with gross pathology, for under many circumstances the practitioner must be competent to recognise the nature of some pathological condition to enable him to act, though the confirmation may perhaps come at another time.

EPITOME

As the result of the only too brief time which the student spends in the study of surgery, he should not only be absolutely familiar with the details of everyday things, but should be so grounded in principles that in unusual difficulties they will serve as a general guide to action. In addition he should have the outlook of the perpetual student so that in any field he will know how to set about in search of new knowledge.

ROYAL EAST SUSSEX HOSPITAL.—The governors agreed, on June 17th, to purchase the university school and grounds, which adjoin this hospital, for £11,000. Extensive alterations will be necessary, but by the purchase of the freehold many thousands of pounds will be saved in not having to erect an entirely new building. The extension will increase the bed accommodation to 145, and leave room for more beds in emergencies.

reopen the door to corruption, and would prevent the development of confidence in the appointment of the officers of local authorities. Nothing could be said in its favour as regards professional officers at any rate.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

THE AMERICAN MEDICAL ASSOCIATION

THE American Medical Association met this year, for the fourth time in its history, at New Orleans. The serious economic condition of the country was reflected in the attendance; not more than 2778 physicians registered, fewer than were present at the last New Orleans gathering in 1920. Two States were without a single representative. The gravity of the present hour was also reflected in the opening address of its speaker, Dr. F. C. Warnshuis, to the House of Delegates on May 9th. "We are at present," he said, "in the vortex of readjustment along every avenue of human endeavour. New professional and public relationships are being formulated. On you ... rests the tremendous responsibility of . . . formulating the fundamental principles that will bring about acceptable readjustments wherein all the traditions and achievements of the medical profession will be conserved, and its relationship to patient and public enhanced." The relationship of the profession to society was also the main theme of the address of the president, Dr. E. Starr Judd, of Rochester, Minnesota. The address was conservative and yet took account of the reality of medico-economic problems and of the trend towards preventive medicine. "Organised medicine must do everything possible to escape having this function of the medical profession taken over exclusively by the Government."

At the third meeting of the House of Delegates a report was adopted asking the board of trustees to appoint a permanent committee to consider medical economy and the cost of medical care in European countries as well as at home. The subject of birth control was shelved. It was felt to be so controversial a subject that it was inadvisable even to appoint a committee to study the question. A resolution was carried protesting against the proposed reduction of the number of medical officers in the Army. For election as president-elect three names were put in nomination: Dr. Dean Lewis, professor of surgery in the Johns Hopkins medical school, Dr. Hugh Cumming, of Washington, and Dr. Fred Moore, of Iowa. Dr. Lewis was elected and Milwaukee was selected as the meeting place for 1933.

LABORATORY SERVICE BY MAIL

The most recent catalogue of Montgomery Ward and Co., which is one of the largest mail order concerns in the United States, contains an announcement of "A New Professional Service." The notice continues, "medical authorities agree that an analysis of the urine, even though the person does not feel ill at the time, often reveals sure signs of disease preparing to strike," and so on. A complete urine analysis "covering 29 chemical and microscopic tests" is offered for $1.50. The American Medical Association sent three specimens for examination, and the reports received were not very creditable. As a result the company have made an investigation themselves and now announce that they have discontinued this service.

THE SERVICES

I.M.S. ANNUAL DINNER

THERE was a large attendance of officers at the annual London dinner of the Indian Medical Service held at the Trocadero Restaurant on June 15th, to meet Sir Samuel Hoare, Secretary of State for India, who was the guest of honour. Importance was added to the occasion by the presence in the chair of Major-General J. W. D. Megaw, Director-General of the Service in India, who is on leave in this country. Nine officers on probation at the R.A.M. College, Millbank, were also there as guests.

Major-General MEGAW, proposing in a combined toast the health of the Service and the health of the Guests, began by conveying to the gathering a message of cordial greeting signed by General Graham from the officers of the I.M.S. now serving in India. He spoke of the rising stock of the Service when a slump might have been expected. They were getting excellent recruits; the last batch, he said, carried off all the prizes open to them at Millbank—a good omen for the future. Excellent relations continued between European and Indian members of the Service, in spite of the suggestion of some Indian politicians that the European members strove to maintain a medical monopoly in India. While it was creditable to all that the Indianisation of the Service had progressed so smoothly hitherto, it would be dangerous to force it unduly. He was glad to remind his fellow officers of the cordial relations existing with the R.A.M.C., paying a tribute to Major-General Nickerson, V.C., "who," he said, "had secured the love and esteem of the members of the I.M.S. as if he were a member himself." He congratulated members whose services had received public recognition during the year, among them Sir Leonard Rogers, Sir Richard Needham, General Graham, and Colonel Mackie, adding a word of sympathy to Sir Ronald Ross in his illness.

WHAT IS AT STAKE

Something more important, continued General Megaw, even than the preservation of the I.M.S. was at stake. There was no hope for India unless it had an efficient medical and public health organisation. That was a sweeping statement, but he made it with a full sense of responsibility. Let them consider the nature of the problem: a population of over 300,000,000, and rapidly increasing, engaged in a constant struggle for a precarious subsistence. Their task was to give these teeming millions a chance of securing a fair, rational, and satisfactory existence. None of the proposals of party politicians in India could influence to any appreciable extent the great elemental forces now ruthlessly at work. The problem of India was essentially biological, not political. He claimed that the medical research worker's first duty was to make a clear statement of the real nature of the problem and of the proper method of providing a solution. Medical and public health workers could not, of course, deal with the situation alone; they needed the coöperation of experts in agriculture, industry, economics, and education. It was clear to all unprejudiced observers that India was rapidly reaching a condition which would demand the united efforts of Indians and Europeans to deal with. When that time came it would be a matter of vital importance to India to have a supply of men of the kind that could only be provided by a strong All-India medical service. Every member of the I.M.S. had, he said, been greatly encouraged by the promise that the British Government was going to keep in the letter and in the spirit the contracts made with all the Indian services. There were signs of a desire to throw up the sponge pleaded justification and fair comment on a matter of public interest. The jury, after listening for 11 days, said no allegations of fraud or dishonesty against Mrs. Morris had been proved, but the article was fair comment on a matter of public interest. Mr. Justice McCardie construed this as a verdict for the defendants and gave judgment accordingly. Mrs. Morris naturally appealed. It seemed odd, as Lord Justice Scrutton remarked, that a newspaper could make a very defamatory charge against her and fail to prove it and yet not have to pay damages. Counsel for the newspaper argued that justification and fair comment were two different defences; if the first failed, the second might still succeed. It was possible that the jury, without coming to the conclusion that Mrs. Morris was a fraud, might still think that some of her claims were questionable and that on this ground the article might be justified. These arguments succeeded and Mrs. Morris lost her appeal. It is true that one of the ingredients of the defence of fair comment is that comment should be fair on facts accurately stated. Still the Court of Appeal decided that it was open to the jury to negative the charge of fraud and yet to say that they did not accept the view that the words complained of involved a charge of dishonesty. There was some evidence on which the jury could base its twofold verdict. It is a verdict which newspapers are likely to find useful.

A striking feature of Lord Justice Scrutton's judgment in the Court of Appeal is his reluctance to leave matters of faith to be tried on evidence before a jury. The Court was evidently disgusted by certain incidents which occurred at the trial. Mrs. Morris, said the Lord Justice, was a trance medium who made a series of statements which some people alleged to be the statements of dead persons speaking through the living; other people said these were mere manifestations of hysteria, having no connexion with any dead persons. This was an issue wholly independent of any question of fraud. Like some other issues, it could not be determined by evidence whether the voice was or was not the voice of a dead person. In Lord Justice Scrutton's view the idea of trying on evidence before a jury such questions as whether there was a Deity or whether there was a hell in another world was one from which sensible persons would recoil. "Such questions are for the faith of each individual citizen on such evidence as he thinks convinces him that he may have faith." A later passage in the Lord Justice's observations seemed to leave little doubt as to his own personal views of Mrs. Morris's trance revelations. It was, he said, rather a mixed committee of dead people who communicated through the plaintiff. There was a dead Indian squaw and a child of 6; if they were alive, no great importance would attach to their communications. Then there was a dead Irish priest who prefaced what he wished to say with "Begorra" and "Sure." There was also a person who declined to say who he was but who had been labelled "Power." These and other references in the Court of Appeal will hardly gratify Mrs. Morris and her supporters, but she has at least the satisfaction that nothing can deprive her of the jury's rejection of the accusation of fraud and dishonesty.

THE METROPOLITAN HOSPITAL.—This institution in the Kingsland-road is faced with a serious financial crisis; tradesmen's bills are outstanding to a considerable amount, the hospital being already in debt and heavily mortgaged. A meeting is being held to consider the position.

IRELAND

(FROM OUR OWN CORRESPONDENT)

NATIONAL HEALTH INSURANCE IN THE FREE STAT

THE Minister for Local Government and Publi Health made a serious statement to representative of the approved societies last week. He told ther *that the financial basis of the national health* insuranc scheme was no longer secure, and that the schem must undergo a thorough revision in the immediat future. The announcement has an unfortunat importance for medical men. The medical professio has long expected a system of medical treatment fo insured persons, and it was known that the lat Minister for Local Government and Public Healt was sympathetic with such a development, but wa withheld from action from lack of funds. Th announcement made last week means not only tha there will be no progress of national health insuranc for the present, but that there will be a retrogressiv move. It is even possible that the existing provisio of funds to pay for medical certificates of incapacit for work may be endangered. The amount, althoug important to medical men, is a trivial item in nationa health insurance expenditure.

IRISH MEDICAL ASSOCIATION

The annual meeting of the Irish Medical Associatio was held in Dublin on June 8th, when Dr. Robert J Rowlette was elected President, and Dr. J. T. Dani was re-elected Vice-President. The Presiden delivered an address on the Need for Organisation the Medical Profession in Ireland. He referred to th *history of the association*, which was now enterin on its ninety-fourth year. He sketched the histor of reforms in the poor-law medical service which ha been brought about mainly by the pressure professional organisations. The association had als exerted itself in promoting the establishment a public health service. In the constitution of th association the public welfare took precedence of th interests of the medical profession. The work reform had been shared for many years, bu particularly in recent years, by the British Medic Association. To the Irish Medical Committee wa due the credit of safeguarding the interests of th profession when they were threatened by the Nation Health Insurance Acts. The President commente on the lack of interest in organisation shown by th medical profession of to-day. Hardly more than on fourth of the practitioners in the Irish Free Stat were members of any organisation. He did no think the position at all a safe one, and he referred certain dangers which threatened professional an public interests at the moment. Medical men in th Government service had been warned that thei salaries were to be "cut" in percentages which woul in some cases be as great as 12½ per cent. Such a interference with contracted salaries, besides being grave hardship to the officers affected, would d away with the sense of security which was, up to th present, one of the chief inducements to professiona men to enter the public service, and would tend t deter the best class of candidates in the futur It had been stated too, apparently with authority that it was intended to alter the method of workin of the Local Appointments Commission which ha proved very successful in the last six years, in such way as to reintroduce local influence in the appoint ment of professional as well as lay officers of loca authorities. Such an alteration of method woul

PANEL AND CONTRACT PRACTICE

Emergency Help for ex-Service Men

THE Joint Council of the Order of St. John and the itish Red Cross Society has an emergency fund igned to give immediate help in emergencies for abled ex-Service men or their widows, and the mmittee are in some doubt whether the possibilities this fund are sufficiently realised by those who may e in contact with cases of distress to which it might applied. The need must be connected with the ablement or death of an ex-Service man, not an icer; the man must have had good effective vice during the Great War, and the proposed istance must not be primarily within the scope of me other voluntary fund or of a public authority. oreover, there must be some definite end in view; e fund is not able to grant anything in the nature a pension to a man whose income is chronically ufficient. The more usual forms of assistance are intenance of a man suffering from a temporary eakdown due to his pensional disability; the ovision of a period of convalescence; assistance men and widows who are awaiting a decision from e Ministry of Pensions; grants for some definite ject like special diet, dental treatment, surgical pliances, bed and bedding, removal expenses or ols; and business grants or loans to men and their idows. The regulations are very elastic, and special nsideration is given to any case which does not come rictly within the limits laid down. There are ergency help representatives in all parts of the untry who will gladly give advice and assistance d. if the case is not suitable for this particular fund, ill do all they can to find the correct source of sistance and to give help during the transfer if there urgent need. The central address of the fund is: oint Council House, 12, Grosvenor-crescent, London, W.1. The committee feels that insurance doctors e likely to come in contact with suitable cases, and anxious that all medical men employed in such ork should be aware of the facilities available.

Public Medical Services

There are in existence in many parts of England hemes for the provision of general practitioner eatment to persons with an income below about 250 per year. One of the oldest of these is active Leicestershire; the Essex Public Medical Service as just presented its eighth annual report, and the ondon Public Medical Service (started in 1926) one of the younger schemes—the object of all ese schemes being to provide an adequate service patients who cannot afford private fees. It is mewhat surprising that in these hard times scarcely y public authorities have taken advantage of them, eferring, it seems, to employ one or more wholeme practitioners in a special building rather than ractitioners of these services in their own surgeries. or the income limit of £250 probably the highest eekly fee is 4*d*. per person, and even this rate is odified where there is a family of dependant children. These schemes are carried on by a committee of octors elected by the doctors working the service. ree choice of doctor is provided, and in contrast ith the present panel regulations, patients, if disatisfied with the doctor of their choice, can change another without waiting.

In London the baby clinic welfare surgery has been ound popular with subscribers. The doctor working the service usually sets apart one convenient time his week in which he does nothing but give advice on infant welfare, issuing printed instructions to mothers, with modifications where necessary, for the feeding of babies at various stages. The mothers appreciate advice from the doctor who attended them in confinement and are certain to stick to their own doctor, provided they feel he is interested and competent, and that there is no extra cost. In contradistinction the usual welfare clinic run by the local authority is staffed by doctors whose knowledge of home conditions may be slight, and who have no further responsibility for the babies and mothers after the consultation at the clinic is over. But the mother does not get patent foods at cost price from the practitioner.

Before these medical service schemes came into existence there certainly was an argument that poor people could not afford to see their own doctor, but that excuse—except in the case of the destitute—does not now exist. Some few public authorities do use a public medical service for the working of their infant welfare clinic, and even for public assistance work. Much economy would result from an extension of this practice. The same principle applies to hospitals where it has been recently stated nearly 70 per cent. of out-patients attend without introduction from their own doctor. The time of the hospital consultant is thus wasted by persons able to obtain adequate general practitioner treatment at home, either privately or under some public medical service scheme, as well as by others who have been the round of many hospitals, and some who probably are at the moment under the doctor of their own choice, and are not in need of special treatment.

ESSEX PUBLIC MEDICAL SERVICE

Dr. A. P. Eldred presided, in the absence of the chairman, Dr. C. H. Panting, at the eighth annual meeting of this service, held at the Liverpool-street Hotel, London, on June 9th. During the past year there has been an improvement in all directions in spite of the widespread depression in trade. Apparently, the service is one of the last items of expenditure with which a family dispenses. The total number of subscribers on the books at the end of 1931, after deducting cancellations, removals, deaths, &c., was 19,477—an increase over the previous year of 914. Of this increase the gain in the number of adults was much greater than that in children. For the first two years of the service's existence there were seven children to every five adults; this disproportion has decreased year by year, until now the figures for adults and children are nearly equal. There was an increase of 24 in the number of new doctor members as against a gain of 12 in the previous year, attributed to sending the report for 1930 to all practitioners in the county. The amounts paid out to doctors during the year totalled £10,390, the largest totals collected for individual doctors being:—

Class of district.	*Total.*
Urban	£892
Semi-rural	£270
Rural	£503
Metropolitan area, in the administrative County of Essex	£393

The excellent work of the paid collectors of the service is demonstrated by the fact that the total arrears still average well under one-half per cent., in spite of the unemployment difficulties experienced.

and regard the work of Britain in India as coming to an end. "I do not," said the director-general, "take that view. I am convinced that, whatever constitution is established in India, the great forces to which I have referred will continue in their remorseless march, so that, even if we desire to leave India to her fate we shall be compelled to continue the work. Only the foundations of a prosperous India have been laid; the structure is far from being completed and is only now beginning to take shape. We older ones can envy the young men who are at the beginning of their career in India; they are embarking on a great adventure in which the I.M.S. will in the future play a greater part than it has ever done in the past."

THE SECRETARY OF STATE'S ASSURANCE.

Sir SAMUEL HOARE, in replying to the toast said that so far as he was concerned, and so far as the Government of which he was a member was concerned, no constitutional changes which had been made would affect the pledges which had been entered into; whatever form the constitution of India might take nothing would be done to disturb the great services which an organisation like the I.M.S. had been able to give. General Megaw's speech had, he said, started two lines of thought. The first was how hollow was the charge that we were taking more out of India than we gave; the second, how great were the benefits which medical science through the I.M.S. was conferring upon the East. Hostile critics had said that the medical services in India were being treated as a monopoly of Europeans; the I.M.S. was an outward and visible sign of the falsity of these charges. That service had been the pioneer of scientific work in the East since the days of Gabriel, Boughton, and John Howell, and their work was not confined to medical science alone. It had extended to botany, zoology, geology, veterinary science, forestry, philology, and other departments of human investigation. When the history of the British connexion in India was written it would, he was sure, prove beyond a doubt that the benefits they had been enabled to confer upon India had far outweighed any material advantages that they had gained. What a romantic history was theirs; he thought of the great work their chairman had done; he thought of the work of Sir Ronald Ross, now lying dangerously ill and whom they all sincerely hoped might soon be restored to health. Every soldier behind his mosquito net might think of how the dangers of malaria and yellow fever had been diminished, if not altogether removed, through his discoveries. Then through the work of Sir Leonard Rogers it had been possible for the first time in human history to cure leprosy in its early stages. The death-rate of cholera had been reduced from 60 to 20 per cent. Liver abscess had been wiped out of the British Army in India. Kala-azar, which between 1881 and 1900 swept up 200 miles of the Assam Valley, with a case-mortality of 96 per cent., and reappeared in 1918 after the influenza epidemic with 80,000 cases, was now in 90 per cent. of the cases cured, and might with sufficient organisation be stamped out in Bengal. What other Empire could, he asked, claim a record of this kind? The achievements of the I.M.S. were written not only in Colonel Crawford's history but in the lives of the men, women, and children which they had saved.

"To-night," Sir Samuel concluded, "I am here, as Secretary of State for India, to bear a tribute to this great record, and to ask you not to be discouraged by the uncertainty of the future. Your work, so far from being finished, is only now beginning to enter upon a new and greater advance. These scientific and biological questions are going to be of much more importance in the future than ordinary political questions. I ask you not to throw in your hand; I ask you to go on constantly in the belief that inestimable as were the benefits your service has conferred upon India in the past, it will bestow even more inestimable benefits in the future."

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the dinner:—

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K.C.S.I.; H. Boulton, C.B., C.B.E.; Sir Leonard Rog
K.C.S.I., C.I.E., F.R.S.; G. Tate, C.I.E.

Colonels: H. Ainsworth; J. Anderson, C.I.E.; R.
Baird; A. B. Fry, C.B., C.I.E., D.S.O.; J. Fullerg
V.H.S.; T. A. Granger, C.M.G.; C. R. M. Green;
Mackie, C.S.I., O.B.E.; Sir Richard Needham, C.I
D.S.O.; W. H. Leonard, K.H.P.; E. L. Perry, D.S.
J. J. Pratt; J. Norman Walker.

Lieut.-Colonels: W. G. P. Alpin, O.B.E.; C. H. Bar
D.S.O.; G. T. Birdwood; R. H. Bott, C.I.E.; E. W
Bradfield, C.I.E., O.B.E.; C. I. Brierley, C.I.E.; H
Cook; D. G. Crawford; J. M. Crawford; J. B. Da
Hunter, O.B.E.; C. Newton-Davis, M.C.; H. R. Dut
C.I.E.; S. C. Evans; J. K. S. Fleming, C.B.E.; P.
Fleming, D.S.O.; G. F. Graham; W. G. Hamilton; W
Harnett; T. A. Hughes; E. V. Hugo, C.M.G.; M. I
Irvine; S. P. James; H. Kirkpatrick; W. B. Lane, C.I
C.B.E.; R. F. D. Macgregor, M.C.; I. M. Macrae, C.
O.B.E.; E. G. Maddock, C.I.E.; W. T. McCowen; F. C
Mell, C.I.E.; R. V. Morrison; F. O'Kinealy, C.V.O., C.I.
T. F. Owens; A. Campbell Munro; T. R. Mulron
A. S. M. Peebles; E. S. Phipson, D.S.O.; C. H. Rheinh
M.C.; H. Ross, C.I.E., O.B.E.; J. D. Sandes; H.
Shortt; G. N. C. Smith, C.M.G.; H. B. Steen; R. St
Ashton Street; W. A. Sykes, D.S.O.; C. Thoms
A. G. Tressider, C.I.E.; H. J. Walton; E. L. Ward, C.M.
A. Denham White; R. E. Wright, C.I.E.

Majors: C. H. P. Allen; R. S. Aspinall; Sir T. C
Evans, M.C.; S. N. Hayes; J. M. Hennessy; R.
J. M. Mitchell, O.B.E.; H. J. H. Symons, M.C.; U
Salamat.

Captains: M. L. Ahuja; G. R. M. Apsey; K.
Bharucha; Dev Datt; T. J. Davidson; J. E. G
K. H. A. Gross, M.C.; W. A. Khan; C. K. Lakshman
F. E. B. Manning; E. A. O'Connor; T. S. Riddle;
Rosenbloom; J. F. Sheperd; Daswant Singh; A. T
R. K. Tandon.

Officers on Probation: Capt. J. H. Crawford; C
W. Happer; Capt. J. J. Quinlan; Capt. R. A. Wes
Lieut. F. C. Jackson; Lieut. H. Hannesson; Lieut. W.
Marrow; Lieut. R. J. Reid; Lieut. M. Sendak.

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. J. J. Cusack to be Surg. Lt.-Comdr.

Surg. Lt. F. St. B. Wickham to *President*, for Me
Dept., Admiralty.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. A. Dawson relinquishes his appt. of Asst. D
Pathology, War Office.

Maj. H. L. Bensted relinquishes the appt. of Asst. Prof
of Pathology, R.A. Med. Coll.

TERRITORIAL ARMY

Lt.-Col. G. F. R. Smith to be Bt. Col.

INDIAN MEDICAL SERVICE

Col. H. M. Mackenzie, C.I.E., V.H.S., retires.

Capt. W. H. Crichton to be Maj.

The undermentioned officers relinquish their t
commns.: Capt. H. R. Balooja and Lt. C. N. Chandrac

ROYAL AIR FORCE

Flight Lt. (hon. Squadron Leader) T. M. Walk
employed with the Regular Air Force for a further ye

VICTORIA PARK HOSPITAL.—The report for
of the City of London Hospital for Diseases of
Heart and Lungs, Victoria Park, records that
in-patients were admitted, whose average stay
50·27 days; their weekly cost was £3 12*s.* 9*d.*
£36,782 the expenditure exceeded the income by £1
and the overdraft was just under £9000. *During the*
a bronchoscopic clinic was established, and 400 pat
were treated "with marked success." The patholo
department is inquiring into the effects of their occup
upon employees in asbestos works, and into pulmo
tuberculosis among young women in the years of adolesc
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Major-Generals: Sir Havelock Charles, Bart., G.C.V.O. K.C.S.I.; H. Boulton, C.B., C.B.E.; Sir Leonard Roger K.C.S.I., C.I.E., F.R.S.; G. Tate, C.I.E.

Colonels: H. Ainsworth; J. Anderson, C.I.E.; R. Baird; A. B. Fry, C.B., C.I.E., D.S.O.; J. Fullergood V.H.S.; T. A. Granger, C.M.G.; C. R. M. Green; F. Mackie, C.S.I., O.B.E.; Sir Richard Needham, C.I.E D.S.O.; W. H. Leonard, K.H.P.; E. L. Perry, D.S.O. J. J. Pratt; J. Norman Walker.

Lieut.-Colonels.: W. G. P. Alpin, O.B.E.; C. H. Barbe D.S.O.; G. T. Birdwood; R. H. Bott, C.I.E.; E. W. Bradfield, C.I.E., O.B.E.; C. I. Brierley, C.I.E.; H. Cook; D. G. Crawford; J. M. Crawford; J. B. Dalze Hunter, O.B.E.; C. Newton-Davis, M.C.; H. R. Dutto C.I.E.; S. C. Evans; J. K. S. Fleming, C.B.E.; P. Go Fleming, D.S.O.; G. F. Graham; W. G. Hamilton; W. Harnett; T. A. Hughes; E. V. Hugo, C.M.G.; M. L. Irvine; S. P. James; H. Kirkpatrick; W. B. Lane, C.I.E C.B.E.; R. F. D. Macgregor, M.C.; I. M. Macrae, C.I.E O.B.E.; E. G. Maddock, C.I.E.; W. T. McCowen; F. O. Mell, C.I.E.; R. V. Morrison; F. O'Kinealy, C.V.O., C.I.E. T. F. Owens; A. Campbell Munro; T. R. Mulroney A. S. M. Peebles; E. S. Phipson, D.S.O.; C. H. Rheinhol M.C.; H. Ross, C.I.E., O.B.E.; J. D. Sandes; H. Shortt; G. N. C. Smith, C.M.G.; H. B. Steen; R. Steen Ashton Street; W. A. Sykes, D.S.O.; C. Thomson A. G. Tressider, C.I.E.; H. J. Walton; E. L. Ward, C.M.G. A. Denham White; R. E. Wright, C.I.E.

Majors: C. H. P. Allen; R. S. Aspinall; Sir T. Care Evans, M.C.; S. N. Hayes; J. M. Hennessy; R. Lee J. M. Mitchell, O.B.E.; H. J. H. Symons, M.C.; Ulla Salamat.

Captains: M. L. Ahuja; G. R. M. Apsey; K. Bharucha; Dev Datt; T. J. Davidson; J. E. Gray K. H. A. Gross, M.C.; W. A. Khan; C. K. Lakshmanar F. E. B. Manning; E. A. O'Connor; T. S. Riddle; Rosenbloom; J. F. Sheperd; Daswant Singh; A. Tai R. K. Tandon.

Officers on Probation: Capt. J. H. Crawford; Cap W. Happer; Capt. J. J. Quinlan; Capt. R. A. Wesso Lieut. F. C. Jackson; Lieut. H. Hannesson; Lieut. W. A. Marrow; Lieut. R. J. Reid; Lieut. M. Sendak.

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. J. J. Cusack to be Surg. Lt.-Comdr.

Surg. Lt. F. St. B. Wickham to *President*, for Medic Dept., Admiralty.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. A. Dawson relinquishes his appt. of Asst. Dir. Pathology, War Office.

Maj. H. L. Bensted relinquishes the appt. of Asst. Profess of Pathology, R.A. Med. Coll.

TERRITORIAL ARMY

Lt.-Col. G. F. R. Smith to be Bt. Col.

INDIAN MEDICAL SERVICE

Col. H. M. Mackenzie, C.I.E., V.H.S., retires.

Capt. W. H. Crichton to be Maj.

The undermentioned officers relinquish their tem commns.: Capt. H. R. Balooja and Lt. C. N. Chandrachu

ROYAL AIR FORCE

Flight Lt. (hon. Squadron Leader) T. M. Walker employed with the Regular Air Force for a further year.

VICTORIA PARK HOSPITAL.—The report for 19 of the City of London Hospital for Diseases of t Heart and Lungs, Victoria Park, records that 10 in-patients were admitted, whose average stay w 50·27 days; their weekly cost was £3 12s. 9d. £102 £36,782 the expenditure exceeded the income by and the overdraft was just under £9000. During the ye a bronchoscopic clinic was established, and 400 patien were treated "with marked success." The pathologic department is inquiring into the effects of their occupati upon employees in asbestos works, and into pulmona tuberculosis among young women in the years of adolescenc the incidence of which is disproportionately high.

rds were abolished some such sum would be ucted from the capitation fee. The records can a very useful defence against charges by a dis-ntled patient, and do if properly kept contain portant useful information. Is it not the system ployed in the practice of keeping records that is fault? It is quite simple to use the medical record d as one of a visiting card index. Taken out in uitable wallet, with other cards, private and panel, which make up the visiting list of the day, entries are made on it at the time, and when the particular illness is sufficiently better for consultation to be restarted, the record card is removed from the daily visiting index and replaced in the consultation index. Of this it is convenient to keep two going: one, a small one, of patients who frequently attend the surgery; the other, the main index of panel patients. Records kept in this way cause little worry.

CORRESPONDENCE

HOSPHATASE AND HYPERVITAMINOSIS

To the Editor of THE LANCET

SIR,—In your issue of May 14th, in a very sane and id article on the Mode of Action of Vitamin D, . L. J. Harris makes the point that the tissues tside the bone) that become most extensively lcified in irradiated ergosterol poisoning are those ich are *richest in phosphatase.* He instances the dney and aorta as being exceptionally well provided th this enzyme. I would not comment on this atement except that some stress is laid on it (p. 1032); is again set forth in the summary, and it may rhaps pass into acceptance if it is not challenged.

In the soft tissues of the adult mammalian body, at most richly endowed with phosphatase is, in fact, ither the kidney nor the aorta but the mucosa of the nall intestine, then follows the kidney, whilst the art musculature and the aorta are almost com-letely lacking in this enzyme.[1] I do not think there any doubt about the almost complete absence of e "bone" enzyme from the aorta and arteries nerally; in between 20 and 30 samples of such sues, calcified and uncalcified, examined in this boratory it has not been possible to find more than ery minute quantities of this enzyme. Calcification the soft tissues following the administration of cess of irradiated ergosterol, which is greatest in the erial walls, rather less in the kidney, and almost in the small intestine, is thus exactly the reverse what would be expected from the phosphatase nt of these tissues.

Furthermore, arterial calcification arising in patho-ical conditions other than "hypervitaminosis D" not seem to be explicable on the basis of the hosphatase content of the calcifying tissue.

I am, Sir, yours faithfully,
H. D. KAY.

University of Toronto, Department of Biochemistry,
June 2nd, 1932

To the Editor of THE LANCET

SIR,—Prof. Kay has kindly permitted me to see advance the above letter. May I point out that exaggerates my actual conclusions in making me y that the sites which become most extensively alcified are those which are *richest* in phosphatase. drew no such strictly quantitative deductions. The information which Prof. Robison communicated o me could perhaps have been put most accurately the form that, in the case of the rat, the kidneys and the intestinal mucosa are "exceptionally rich" phosphatase, while amongst certain other tissues the aorta may contain very significant amounts. well recognised that the presence of phosphatase not likely to be the *sole* factor governing the extent f calcification, as I indicated in the original paper,[2] on which THE LANCET summary was based. I do maintain, however, that the phosphatase factor is bound to be of great importance. In the case of the kidney it will be noted that there is a correlation between calcification and phosphatase activity; as to the aorta we see that the question of its phosphatase activity is now under discussion; while it must be pointed out that the small intestine does in fact definitely show a well-marked tendency to calcification in hypervitaminosis.

It should have been made clear that the mention in my article in THE LANCET of calcification in vitro with hypervitaminosis serum carried out in collaboration with Prof. Robison related only to a preliminary experiment and that further investigations are still in progress. The interpretation was, of course, entirely my own. But it seems certain that the increased Ca × P level in the blood in hypervitaminosis is bound to favour increased calcification.

I am, Sir, yours faithfully,
LESLIE J. HARRIS.

Dunn Nutritional Laboratory, Cambridge,
June 15th, 1932.

To the Editor of THE LANCET

SIR,—Dr. Harris has referred to certain results recently obtained in my laboratory; I should be glad if you would allow me to explain these results a little more fully.

In collaboration with Miss L. M. B. Patterson and Dr. M. G. Macfarlane I have reinvestigated the relative phosphatase content of various animal tissues, employing a modified technique which, I consider, gives a more just estimate of the enzyme present. The results have confirmed the previous conclusions[1] as to the very high activity of bone, intestinal mucosa and kidney, the low activity of liver, pancreas, and muscle, and the almost complete absence of the enzyme from non-ossifying costal cartilage. In the rat certain other tissues, especially the aorta, heart muscle, lung, and thyroid have been found to contain phosphatase in significant amounts which may even exceed one-third of that in bone or kidney. Our results for other animals are not yet complete but indicate that in the rabbit and guinea-pig some of these tissues, including the aorta, may possess very much less phosphatase than those of the rat.

We have been interested to discover whether any correlation exists between the phosphatase activity of these soft tissues and their propensity to undergo calcification in pathological conditions, and hope to discuss this question very shortly. There is ample evidence that other factors besides phosphatase must be concerned in calcification, whether normal or abnormal, so that direct proportionality between phosphatase content and degree of calcification need not be expected.

Dr. Harris also referred to an experiment on especially in the districts of Chadwell Heath, Dagenham, Becontree, and Harwich. The last-named indeed depends almost entirely on its docks, where the tariffs on imported goods have already resulted in the discharge of over 200 men.

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[1] Biochem. Jour., 1928, xxii., 855.

[2] Ibid., 1931, xxv., 367.

[1] Robison and Soames: Biochem. Jour., 1924, xviii., 740.

Difficulties of Insured Persons other than Certification

At a conference of doctors, chemists, and representatives of approved societies, held at Brighton on *June* 1st, Mr. R. A. Goddard (*on behalf of the* M.U.O.O.F.) asked for consideration of the difficulties of the person insured under the N.H.I. Acts, other than in relation to certification or treatment. Doctors, he said, did not always give full account for the mentality of the average insured person. He was generally a man of small education, conscious of his own inferiority. He was not always able to articulate properly what he wanted, and when he met a man of superior qualifications it was difficult for him not to adopt an aggressive resentment. When a patient went on the funds he usually gave up a low wage for a still lower sickness benefit, and he would like the doctor to have more tolerance with him. It had been said that there was an enormous amount of malingering. He agreed that there was some, and it was difficult for the doctor at times to discover what was genuine. When in doubt doctors should call in the R.M.O. Societies were objecting to unduly prolonged claims on the part of their members; they had to bear in mind that they were the trustees of funds for the benefit of those who were genuinely *ill* and entitled. He had, he said, heard of cases where doctors had not responded to calls for domiciliary visits when they ought to have done so, and cases in which the doctor had seen a patient at his surgery and ordered him to bed, and had not followed that up by paying a visit for several days. There were also cases of doctors—he was not suggesting it was general—charging fees and neglecting to follow the prescribed procedure for issuing receipts for fees, or charging for what was described (possibly rightly) as being outside the scope of a general practitioner's duty, but without informing the patient beforehand that he was going to be so charged. There was, he said, a very strong feeling that panel patients were not treated in the same way as ordinary private patients. Complaints had been made of the waiting-rooms and surgeries for panel patients being different from those used by other patients. In a few instances the doctor did not treat the insured person in the same way as he treated a private patient. He did not wish to infer *that there were numerous instances, but* a few did exist, and should be remedied. He would like to have an organisation of doctors, approved societies, and insured persons to discuss all these difficulties and see whether a solution could be found.

Dr. R. G. Chase, in reply, said he did not think any doctor present would defend discourtesy to a panel patient or omission to pay domiciliary visits when required. It was for the doctor to decide whether a visit was necessary, and he should not wait for a message from the patient. Neither would he defend doctors who kept separate waiting-rooms or separate surgeries. But with regard to what had been said as to the inferiority complex of the panel patient, he thought that explained a lot. He had been on the medical service subcommittee for London for some years, and almost all the complaints they had to deal with could be put down, indirectly if not directly, to an inferiority complex. In London, 61 per cent. of the cases (and they heard some 70 a year) were complaints against doctors for failure to provide treatment, or for neglect during treatment, or for unsatisfac conduct of the case—all of which came under complex. In fairness to the London doctors he w add that 46 per cent. of the complaints were not stantiated. What, he asked, was the cure for complex? In the first place, he thought the condit of contribution under the Act should be more explained to the insured person. He had made rule to ask insured persons who had lodged a compl whether they ever read their medical card; the g majority said they had not. That was one of difficulties of the panel patient; he did not know rules. Reference to regional medical officers w serious cause of complaint amongst the patients. was a common thing for a patient to come befo R.M.O. and refuse to be examined, saying that he perfectly satisfied with his own doctor. The R.M had then to explain that the society had a right u the rules to a second medical opinion, and tha would try to be fair. Even then, a numbe patients still complained, regarding it as a sligh their doctor, or on themselves. Societies, when sen references to the R.M.O., might well consider what patient himself thought of it. Except in a Gov ment service, he could not conceive the interposi of a second doctor between a patient and his practitioner without causing a lot of trouble. betterment of conditions of reception-rooms he not think important. An insurance practitioner in open competition with his neighbours; it was business to allow patients to sit in bad conditions, a doctor who did that would soon find that patients left him. In the matter of charging fee the cases which came before the subcommittee, 19 cent. had been complaints of this kind. In gen they were due to the insured person not kno the rules; if, for instance, a patient went to a do being on the panel of another doctor within two m it was perfectly legitimate for that doctor to ch him. Finally, he dealt with a complaint not menti by Mr. Goddard. In London there was qui common understanding amongst pregnant wo that they were entitled to at least four weeks' sick before the confinement. When about eight mon pregnant they came up saying the agent had them that they were entitled to four weeks' sick and they wanted a certificate. Possibly they doing ordinary housework, and quite capabl doing it. He wished societies would get a more c petent type of person for sick visitation. Any acting as R.M.O. must have had people sent up to whose breathing could be heard in the next ro people with splints right up to *the hip on both* walking on two crutches—and asked to certify whe these people were fit for work.

Medical Records

Medical Practitioner, N.W.1, writes:—" remarks on medical records in your issue of June (p. 1274) call for some comment. In a busy Lon practice it is almost an impossibility to enter up e time one sees a patient. In the country w patients are often seen at branch surgeries *in* outl villages, and records are usually kept at the cen surgery, it is an impossibility. Clinically, of what is it to enter up a simple cold or muscular rheumatis For his own reference and convenience the do may enter up the salient points of an important c but to be forced to enter each and every occasio a burden and worry." Doctors are however pai it is believed something approaching *2s. 6d.* per hea to keep these records, and it is almost certain tha n admission the lesion which was situated in palm of the left hand just proximal to the base the first finger was scabbed over and almost The attack was not a severe one, the general occurring only two or three times daily, the rigidity of the affected hand and arm of the jaw was more continuous. Spasms and rigidity ceased on Dec. 17th, 13 days from the of symptoms, and 21 days from the accident. overy was uninterrupted except by the occurrence uppuration at the site of the lesion which necessi- d opening and drainage. Until then no local tment had been applied. He received in all 000 English units of antitoxin, 30.000 intra- cally, 15,000 intravenously, and 30,000 intra- cularly. These were all administered within the six days after admission.

he points of interest apart from the cause were : Onset within eight days after the injury, with a tively mild attack. (2) Vigorous antitoxin treat- nt. (3) No interference with the initial lesion il it suppurated 12 days after the tetanus had sed.

I am, Sir, yours faithfully,

FREDERICK LANGMEAD.

t. Mary's Hospital, W., June 20th, 1932.

ANTIBODIES IN YELLOW FEVER

To the Editor of THE LANCET

SIR,—In your issue of June 11th your reviewer of monograph on "Filterable Virus Diseases in n" declares me guilty of a contradiction when tate (*a*) that the serum of yellow fever convalescents capable of protecting against an injection of ective blood, and immediately afterwards (*b*) that ither immune bodies nor viricidal properties have en demonstrated in the serum of convalescents.

I cannot agree that there is any contradiction. hen a serum confers passive immunity, it is legiti- ate to infer that "protective substances" are esent, but it is not equally legitimate to infer the chanism of the protection without further evidence. cannot, for example, be directly inferred that the is viricidal. If an infective dose is given sequent to the protective serum, then the resulting may be equally well explained by the iricidal properties of the tissues (no doubt in some modified by the passively protecting serum) by such properties of the protective serum itself. he only *evidence* that the serum is viricidal would an experiment in which the protective serum first mixed with the infective dose. Even then e absence of symptoms after an injection of the ixture need not be explained by the viricidal roperties of the serum, for if interaction of the tissues nd the protective serum were essential for the laboration of the viricidal bodies, then obviously e virus would remain unaffected after mixing ith the serum, and only after injection of the mixture ould the viricidal bodies appear. Hence the mixture ould have to be freed from serum by centrifugalising nd washing the bottom layer with saline; the bsence of symptoms after inoculation of the washed irus can then be taken as evidence of viricidal bodies the protective serum. From the very nature of e filterable virus, the presence of viricidal bodies ust be more difficult and more exacting than the emonstration of bactericidal bodies. In the same ay the presence of immune body—i.e., amboceptor— not to be directly inferred from the fact of passive immunity, however reasonable it may be to anticipate its presence; the usual evidence must first be sought of the ability of the immune serum to deviate compliment in the presence of antigen.

Hence in making the statements which your reviewer criticises I have not been guilty of a contradiction, although indeed I may have been guilty of overlooking the experimental evidence I sought of the existence of viricidal bodies or of amboceptor. Since the publication of my book, although only a few months ago, yellow fever research has made considerable progress, including proof of the presence of complement-fixing bodies[1] in convalescent serum, and successful cultivation of the virus in tissue culture medium.[2]

I am, Sir, yours faithfully,

J. FINE.

University of Edinburgh, Usher Institute of
Public Health, June 13th, 1932.

*_** All the available evidence, both in the case of the cultivable bacteria as well as the filtrable viruses, goes to show that the power of a serum to confer passive immunity is a function of its antibody content. In his article on yellow fever in "A System of Bacteriology" (vol. vii.), Prof. E. Hindle states (p. 458), "Experiments with the serum of both man and monkeys after recovery, show that immune bodies are present in considerable strength." The presence of neutralising antibodies in the serum of yellow fever convalescents was demonstrated by Stokes, Bauer, and Hudson in 1928 (*Amer. Jour. Trop. Med.*, viii., 103), and again by Hindle in 1929 (*E. Trans. Roy. Soc. Trop. Med. and Hyg.*, xxii., 405), and specific complement fixation was obtained by Monteiro and Travassos in 1930 (*Compt. Rend. Soc. Biol.*, civ., 290), and by N. P. Hudson in 1931 (*Arch. Path.*, xi., 326). Other work bearing on this point could be cited, but these references are picked out to show that considerable evidence exists of the presence of specific antibodies in the serum of yellow fever convalescents.—ED. L.

ADSORPTION OF IODINE BY ACTIVATED CARBON

To the Editor of THE LANCET

SIR,—In his paper in your issue of April 2nd (p. 724) Mr. B. A. Adams states that he employed the sodium nitrite method of Martindale and Westcott for the determination of iodine in water. May I point out that according to Dr. Martindale ("Extra Pharmacopœia," 1929, ii., 425) the limit of delicacy of this method is about 18 gamma (gamma = 0·001 mg.) of iodine—i.e., approximately ¾ gamma per litre on a 25-litre quantity of water. From my own experience this is, if anything, a somewhat liberal estimate of the delicacy of the test. Since Mr. Adams worked on only 2 litres of water he would have been unable to detect less than 9 gamma of iodine per litre—i.e., 45 per cent. of the total 20 gamma per litre which he added to the water before carbon treatment. Under these circumstances it can hardly be taken as conclusive that because no iodine was detected it had been adsorbed by the activated carbon "invariably and completely." In order to justify such an assumption it would be necessary to examine far larger quantities of water than 2 litres, preferably with control tests on the water before carbon treatment.

I am, Sir, yours faithfully,

Maldon, Essex, June 1st, 1932. G. U. HOUGHTON.

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[1] Hudson, N. Paul: Amer. Jour. Hygiene, 1932, xv., No. 2, 557.

[2] Haagen, E., and Theiler, M.: Proc. Soc. Exper. Biol. and Med., 1932, xxix., 435.

calcification in vitro of bone slices in the serum of rats suffering from hypervitaminosis. The results of this experiment are consistent with the view that the increased calcification in hypervitaminosis can be explained, at least in part, by the raised level of the product Ca×P in the blood, but they cannot, in my opinion, be taken as evidence that vitamin D does not in addition exert a more direct action on the tissues of the bone.—I am, Sir, yours faithfully,

ROBERT ROBISON.

Lister Institute of Preventive Medicine, London, S.W.,
June 15th, 1932.

ROYAL COLLEGE OF PHYSICIANS OF LONDON:

LEVERHULME RESEARCH SCHOLARSHIPS

To the Editor of THE LANCET

SIR,—The reference which you make in your issue of June 11th (p. 1266) to the Leverhulme Research Scholarships at the Royal College of Physicians would, I am afraid, lead your readers to assume that these scholarships were being given by myself personally. I think it only right to point out that they have been given by the trustees (of whom I am one) appointed to administer a special trust fund under the will of my father. The scholarships are, therefore, virtually a gift from my late father, and it is for this reason that the Royal College of Physicians proposes to call them the "Leverhulme Research Scholarships."

I am, Sir, yours faithfully,

June 18th, 1932. LEVERHULME.

APPENDICITIS

To the Editor of THE LANCET

SIR,—If Mr. E. R. Flint had read my letter more carefully he would hardly have drawn such erroneous conclusions as to my practice. To suggest that I wait "until the appendix has perforated in order to get a clear indication for operation" is an inference which cannot be drawn from my letter. What I did say was that if operation be delayed for a few hours, the symptoms *frequently* subside so *that operation* can be deferred, sometimes avoided. If the symptoms do not subside, obviously the morbid process is progressive and operation should be performed *before* perforation occurs. The indication for operation is not perforation, but non-subsidence or exacerbation of the symptoms which suggest that perforation may occur. Neither did I say that even when this catastrophe has occurred I "spend several hours in giving saline, &c., *with the hope that the symptoms will subside*" (the italics are mine). On the contrary, I wrote "Perforation . . . is obviously an indication for operation." I can assure Mr. Flint that the catastrophes he fears do not occur when the expectant treatment is carried out with the exercise of common sense.

Mr. Flint says that the ideal treatment is operation within a few hours of onset. But is it ideal from the patient's point of view? This teaching premises that diagnosis is an exact science. If Mr. Flint maintains that he can make a certain diagnosis within a few hours of onset in every case of abdominal pain, then there would be some justification for this teaching, otherwise it is certainly not ideal from the patient's point of view. A patient would scarcely regard operation as the ideal treatment for intestinal colic, and yet in the initial stages of an attack of abdominal pain it is not always possible to be certain that the fons et origo mali is the appendix. What if the patient on whom an unnecessary operation is per-
formed dies? Such a happening is not unk
A few years ago there was such a tragedy wi
short distance of the room in which I write.

The argument that it is better occasionally to re
a healthy appendix than to lose one patient'
through taking the risks of delay is a plausibl
fallacious one, for I maintain that the expe
treatment is not taking risks but diminishing
provided that the patient is kept at absolute res
that no purgatives are administered. The risk
injudicious use of purgatives is one that cann
emphasised too often. Perforation without lo
tion is almost always the result of disregard of
precautions.

Surgery is an art, not a science; and being an
depends on qualities which all who practise it
acquire for themselves. Hard-and-fast rules can
laid down. Judgment and common sense mus
play their part in the treatment of disease.

I am, Sir, yours faithfully,

London, W., June 18th. HERBERT J. PATERS

UNIVERSITY OF DURHAM COLLEGE MEDICINE

To the Editor of THE LANCET

SIR,—All those who take a special interest i
welfare of the Newcastle Medical School and i
development of medical education in this co
will be grateful to you for the publication o
article on p. 1328 of your issue of June 18t
perusal of this fair and unbiased statement o
present condition of affairs will indicate the nec
for an immediate and unrestricted inquiry int
administration of the University of Durham C
of Medicine and its relationship to Armstrong C
and to the University as a whole. As many of
readers who are interested in these questions
not had the opportunity of reading Prof. H.
Briscoe's admirable letter printed in the New
Evening Chronicle of June 8th, to which you
I would suggest that this letter might with adva
be reproduced in THE LANCET for their be
My interest in one of the questions at issue is d
the fact that like Prof. Hutchens I was first
appointed lecturer in bacteriology and compa
pathology in the College of Medicine in 1891
when appointed to the newly instituted
professorship in 1893 ceased to be a lecturer.
these circumstances it is difficult to understan
what grounds it can be maintained that Prof. Hut
who succeeded me in the professorship still rem
a lecturer for 23 years.

I am, Sir, yours faithfully,

GEORGE R. MURR.

St. John's-street, Manchester, June 20th, 1932.

TOY PISTOL WOUNDS

To the Editor of THE LANCET

SIR,—May I add another case of tetanus follo
wounds inflicted by toy pistols to those describe
Miss Gwendoline Smith in your issue of June
since it occurred during the same period?
that of a boy of 12 years who was admitte
St. Mary's Hospital on Dec. 5th, 1931, with the
that the cartridge of a toy pistol had explode
the left hand on Nov. 25th. This was foll
eight days later by stiffness of the back of the
and on the following day by rigidity of the
left arm, and hand.

On admission the lesion which was situated in e palm of the left hand just proximal to the base the first finger was scabbed over and almost aled. The attack was not a severe one, the general izures occurring only two or three times daily, though the rigidity of the affected hand and arm d of the jaw was more continuous. Spasms and cal rigidity ceased on Dec. 17th, 13 days from the set of symptoms, and 21 days from the accident. ecovery was uninterrupted except by the occurrence suppuration at the site of the lesion which necessi[illegible] opening and drainage. Until then no local [illegible] had been applied. He received in all [illegible] English units of antitoxin, 30,000 intra[illegible]lly, 15,000 intravenously, and 30,000 intra[illegible]. These were all administered within the [illegible] six days after admission.

The points of interest apart from the cause were:) Onset within eight days after the injury, with a [illegible]tively mild attack. (2) Vigorous antitoxin treat[illegible] (3) No interference with the initial lesion [illegible] it suppurated 12 days after the tetanus had ased.

I am, Sir, yours faithfully,

FREDERICK LANGMEAD.

St. Mary's Hospital, W., June 20th, 1932.

ANTIBODIES IN YELLOW FEVER

To the Editor of THE LANCET

SIR,—In your issue of June 11th your reviewer of [illegible] monograph on "Filterable Virus Diseases in [illegible]" declares me guilty of a contradiction when state (*a*) that the serum of yellow fever convalescents capable of protecting against an injection of ective blood, and immediately afterwards (*b*) that either immune bodies nor viricidal properties have een demonstrated in the serum of convalescents.

I cannot agree that there is any contradiction. hen a serum confers passive immunity, it is legiti[illegible]e to infer that "protective substances" are [illegible], but it is not equally legitimate to infer the [illegible] of the protection without further evidence. cannot, for example, be directly inferred that the [illegible] is viricidal. If an infective dose is given [illegible]sequent to the protective serum, then the resulting [illegible] may be equally well explained by the iricidal properties of the tissues (no doubt in some ay modified by the passively protecting serum) by such properties of the protective serum itself. he only *evidence* that the serum is viricidal would e an experiment in which the protective serum first mixed with the infective dose. Even then e absence of symptoms after an injection of the ixture need not be explained by the viricidal roperties of the serum, for if interaction of the tissues d the protective serum were essential for the aboration of the viricidal bodies, then obviously e virus would remain unaffected after mixing ith the serum, and only after injection of the mixture ould the viricidal bodies appear. Hence the mixture ould have to be freed from serum by centrifugalising d washing the bottom layer with saline; the bsence of symptoms after inoculation of the washed irus can then be taken as evidence of viricidal bodies the protective serum. From the very nature of e filterable virus, the presence of viricidal bodies ust be more difficult and more exacting than the emonstration of bactericidal bodies. In the same ay the presence of immune body—i.e., amboceptor— not to be directly inferred from the fact of passive immunity, however reasonable it may be to anticipate its presence; the usual evidence must first be sought of the ability of the immune serum to deviate complement in the presence of antigen.

Hence in making the statements which your reviewer criticises I have not been guilty of a contradiction, although indeed I may have been guilty of overlooking the experimental evidence I sought of the existence of viricidal bodies or of amboceptor. Since the publication of my book, although only a few months ago, yellow fever research has made considerable progress, including proof of the presence of complement-fixing bodies[1] in convalescent serum, and successful cultivation of the virus in tissue culture medium.[2]

I am, Sir, yours faithfully,

J. FINE.

University of Edinburgh, Usher Institute of
Public Health, June 13th, 1932.

*** All the available evidence, both in the case of the cultivable bacteria as well as the filtrable viruses, goes to show that the power of a serum to confer passive immunity is a function of its antibody content. In his article on yellow fever in "A System of Bacteriology" (vol. vii.), Prof. E. Hindle states (p. 458), "Experiments with the serum of both man and monkeys after recovery, show that immune bodies are present in considerable strength." The presence of neutralising antibodies in the serum of yellow fever convalescents was demonstrated by Stokes, Bauer, and Hudson in 1928 (*Amer. Jour. Trop. Med.*, viii., 103), and again by Hindle in 1929 (*E. Trans. Roy. Soc. Trop. Med. and Hyg.*, xxii., 405), and specific complement fixation was obtained by Monteiro and Travassos in 1930 (*Compt. Rend. Soc. Biol.*, civ., 290), and by N. P. Hudson in 1931 (*Arch. Path.*, xi., 326). Other work bearing on this point could be cited, but these references are picked out to show that considerable evidence exists of the presence of specific antibodies in the serum of yellow fever convalescents.—ED. L.

ADSORPTION OF IODINE BY ACTIVATED CARBON

To the Editor of THE LANCET

SIR,—In his paper in your issue of April 2nd (p. 724) Mr. B. A. Adams states that he employed the sodium nitrite method of Martindale and Westcott for the determination of iodine in water. May I point out that according to Dr. Martindale ("Extra Pharmacopœia," 1929, ii., 425) the limit of delicacy of this method is about 18 gamma (gamma = 0·001 mg.) of iodine—i.e., approximately ¾ gamma per litre on a 25-litre quantity of water. From my own experience this is, if anything, a somewhat liberal estimate of the delicacy of the test. Since Mr. Adams worked on only 2 litres of water he would have been unable to detect less than 9 gamma of iodine per litre—i.e., 45 per cent. of the total 20 gamma per litre which he added to the water before carbon treatment. Under these circumstances it can hardly be taken as conclusive that because no iodine was detected it had been adsorbed by the activated carbon "invariably and completely." In order to justify such an assumption it would be necessary to examine far larger quantities of water than 2 litres, preferably with control tests on the water before carbon treatment.

I am, Sir, yours faithfully,

Maldon, Essex, June 1st, 1932. G. U. HOUGHTON.

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[1] Hudson, N. Paul: Amer. Jour. Hygiene, 1932, xv., No. 2, 557.

[2] Haagen, E., and Theiler, M.: Proc. Soc. Exper. Biol. and Med., 1932, xxix., 435.

calcification in vitro of bone slices in the serum of rats suffering from hypervitaminosis. The results of this experiment are consistent with the view that the increased calcification in hypervitaminosis can be explained, at least in part, by the raised level of the product Ca × P in the blood, but they cannot, in my opinion, be taken as evidence that vitamin D does not in addition exert a more direct action on the tissues of the bone.—I am, Sir, yours faithfully,

ROBERT ROBISON.

Lister Institute of Preventive Medicine, London, S.W., June 15th, 1932.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: LEVERHULME RESEARCH SCHOLARSHIPS

To the Editor of THE LANCET

SIR,—The reference which you make in your issue of June 11th (p. 1266) to the Leverhulme Research Scholarships at the Royal College of Physicians would, I am afraid, lead your readers to assume that these scholarships were being given by myself personally. I think it only right to point out that they have been given by the trustees (of whom I am one) appointed to administer a special trust fund under the will of my father. The scholarships are, therefore, virtually a gift from my late father, and it is for this reason that the Royal College of Physicians proposes to call them the "Leverhulme Research Scholarships."

I am, Sir, yours faithfully,

June 18th, 1932. LEVERHULME.

APPENDICITIS

To the Editor of THE LANCET

SIR,—If Mr. E. R. Flint had read my letter more carefully he would hardly have drawn such erroneous conclusions as to my practice. To suggest that I wait "until the appendix has perforated in order to get a clear indication for operation" is an inference which cannot be drawn from my letter. What I did say was that if operation be delayed for a few hours, the symptoms frequently subside so that operation can be deferred, sometimes avoided. If the symptoms do not subside, obviously the morbid process is progressive and operation should be performed *before* perforation occurs. The indication for operation is not perforation, but non-subsidence or exacerbation of the symptoms which suggest that perforation may occur. Neither did I say that even when this catastrophe has occurred I "spend several hours in giving saline, &c., *with the hope that the symptoms will subside*" (the italics are mine). On the contrary, I wrote "Perforation . . . is obviously an indication for operation." I can assure Mr. Flint that the catastrophes he fears do not occur when the expectant treatment is carried out with the exercise of common sense.

Mr. Flint says that the ideal treatment is operation within a few hours of onset. But is it ideal from the patient's point of view? This teaching premises that diagnosis is an exact science. If Mr. Flint maintains that he can make a certain diagnosis within a few hours of onset in every case of abdominal pain, then there would be some justification for this teaching, otherwise it is certainly not ideal from the patient's point of view. A patient would scarcely regard operation as the ideal treatment for intestinal colic, and yet in the initial stages of an attack of abdominal pain it is not always possible to be certain that the fons et origo mali is the appendix. What if the patient on whom an unnecessary operation is performed dies? Such a happening is not unkno
A few years ago there was such a tragedy with
short distance of the room in which I write.

The argument that it is better occasionally to rem
a healthy appendix than to lose one patient's
through taking the risks of delay is a plausible
fallacious one, for I maintain that the expec
treatment is not taking risks but diminishing r
provided that the patient is kept at absolute rest
that no purgatives are administered. The risk o
injudicious use of purgatives is one that canno
emphasised too often. Perforation without loca
tion is almost always the result of disregard of t
precautions.

Surgery is an art, not a science; and being an a
depends on qualities which all who practise it r
acquire for themselves. Hard-and-fast rules canno
laid down. Judgment and common sense must
play their part in the treatment of disease.

I am, Sir, yours faithfully,

London, W., June 18th. HERBERT J. PATERSO

UNIVERSITY OF DURHAM COLLEGE O MEDICINE

To the Editor of THE LANCET

SIR,—All those who take a special interest in
welfare of the Newcastle Medical School and in
development of medical education in this cou
will be grateful to you for the publication of
article on p. 1328 of your issue of June 18th.
perusal of this fair and unbiased statement of
present condition of affairs will indicate the nece
for an immediate and unrestricted inquiry into
administration of the University of Durham Co
of Medicine and its relationship to Armstrong Co
and to the University as a whole. As many of
readers who are interested in these questions
not had the opportunity of reading Prof. H. V
Briscoe's admirable letter printed in the Newc
Evening Chronicle of June 8th, to which you r
I would suggest that this letter might with advan
be reproduced in THE LANCET for their ben
My interest in one of the questions at issue is du
the fact that like Prof. Hutchens I was first o
appointed lecturer in bacteriology and compar
pathology in the College of Medicine in 1891,
when appointed to the newly instituted H
professorship in 1893 ceased to be a lecturer. U
these circumstances it is difficult to understand
what grounds it can be maintained that Prof. Hutc
who succeeded me in the professorship still remai
a lecturer for 23 years.

I am, Sir, yours faithfully,

GEORGE R. MURRA

St. John's-street, Manchester, June 20th, 1932.

TOY PISTOL WOUNDS

To the Editor of THE LANCET

SIR,—May I add another case of tetanus follo
wounds inflicted by toy pistols to those described
Miss Gwendoline Smith in your issue of June 1
since it occurred during the same period? I
that of a boy of 12 years who was admitted
St. Mary's Hospital on Dec. 5th, 1931, with the st
that the cartridge of a toy pistol had explode
the left hand on Nov. 25th. This was follo
eight days later by stiffness of the back of the n
and on the following day by rigidity of the
left arm, and hand.

ly, to dominate more completely the environ- . The other two factors are the promotion e fore limb to a delicate explorer of space in fold directions, and the organisation of mimetic ments to express thoughts by sounds.

baby announces its presence in a way that s no doubt as to the power of its laryngeal ulature. Yet later on it has to learn how best xpress thoughts by sounds. Is that done by s calculated to increase the power of his speaking les? Later on the child arrives at the school nd is going to learn how to use his fore limb delicate explorer of space in a very special way ., to form letters and words in writing. Is this se its writing muscles are lacking in power? e not have to curb in our babies the utterances ryngeal power, and must we not protect living other valuables against the manifestations of al and digital muscle-power of our young ? Likewise my astheno-vergence patients will squint internally to 60°–75°, while they only produce *involuntary* convergence to, say, f deviation. Education enables the centres for movements and for speech in the neo-pallium ain better control over the motor-coördinations ding over the powerful musculature of the heral organs concerned. Likewise, kinetic treat- enables the centres for convergence in the neo- um to gain a surer control over the midbrain es for ocular movements in the interest of veal single vision.

have chosen "amblyopia" and not "fatigue" as erm for the partial loss of sight under considera- , because in all my patients treated for eyestrain on unt of astheno-vergence I never saw an instance of nic fatigue (mental or other), except in the only neurotics I tried to treat kinetically. If I I would not have given them a strenuous kinetic ment, but would rather have prescribed them tal and visual rest. My astheno-vergence nts were without muscular eye defects and inly not "run down in health." The partial of sight was not attributable to any other cause to chronic inability of long standing to bring two foveal images to cover one another com- ly, accurately, and at any moment required. adults treated by me for astheno-vergence almost without exception vigorous, healthy, , hard-working men and women; the children ted were, apart from astheno-vergence, normal. ade the mistake—unavoidable at the time—of ting also three patients of neurotic disposition, these treatments were notable failures. These ents may have suffered from mental fatigue but, ting that they did, I cannot see why the term nblyopia" should not be applied to such cases. use the word fatigue in this connexion would be uly stretching its usual meaning. I could, aps, admit that fatigue is a link in the chain ausality of the partial loss of sight in this sense; the chronic inability to bring the two visual to meet accurately on the object of vision lays rain on the visual centres, a strain which leads to a ain amount of exhaustion or fatigue of the motor of these centres, and that in the long run a giving , a kind of neutralisation of vision of on or both manifests itself in amblyopia. But the amblyopia observed fact, the mental fatigue only a hypothesis xplain the fact.—I am, Sir, yours faithfully,

hannesburg, S. Africa, May 4th. N. A. STUTTERHEIM.

** We spoke of the claim to cure amblyopia y means of prisms calculated to increase the power of the converging *muscles*," whereas in the cases referred to it is not the muscles that are defective but the nervous mechanism which governs their action in converging the two eyes on any given point, and we accept Dr. Stutterheim's correction without reserve. It is not hard to understand that by his exercises he succeeds in so toning up the reflex nervous mechanism that the range through which "involuntary convergence" is effective in overcoming prisms base out, with the eyes fixed on a distant object, can be greatly increased in most healthy subjects. It is far more difficult to accept his claim that visual acuity, both binocular and monocular, can be definitely increased by these methods. When this happens the explanation may, as we suggested, be the overcoming of fatigue affecting, on the one hand, the nervous mechanism through which convergence of the two eyes to any given point is effected, and, on the other hand, the nervous mechanism by which the retinal images of one or both eyes are interpreted. This explanation may not be correct, but the claim to cure "amblyopia" by Dr. Stutterheim's procedure is so startling that one seeks for some explanation to make it seem possible.—ED. L.

TRAINING IN MASSAGE AND MEDICAL GYMNASTICS

To the Editor of THE LANCET

SIR,—It has come to the knowledge of the Chartered Society of Massage and Medical Gymnastics that there are a number of organisations in London and in provincial towns which profess to give a training in massage and medical gymnastics by correspondence, and which issue certificates and diplomas. These subjects necessitate a considerable knowledge of anatomy, physiology, pathology, medicine, and surgery as well as technical ability and clinical experience. This knowledge and experience can only be obtained by personal teaching and by the actual treatment of patients. It is to be hoped that members of the medical profession will inquire critically into the qualification and experience of masseurs and masseuses who offer to assist them in treating their patients, and that they will not be deceived by diplomas granted after a correspondence course or some other totally inadequate system of training.

I am, Sir, yours faithfully,

R. C. ELMSLIE.

Portland-place, W., June 9th, 1932.

BORACIC POWDER AND VACCINATION

To the Editor of THE LANCET

SIR,—In your issue of June 11th (p. 1288) a question was asked in the House of Commons regarding the use of boracic lint in vaccination in the Army. The answer was given that it was to be abandoned on the score of economy, but that boracic powder and ordinary lint would be issued instead. If this is correct it is a pity that the mistaken use of boracic in dressing a vaccinated arm should be continued. It is directly responsible for the irritation so frequently seen. Since substituting plain sterile gauze I have not seen one single case of irritation, whereas previously it was the rule rather than the exception.

I am, Sir, yours faithfully,

June 10th, 1932. Late R.A.M.C., T.

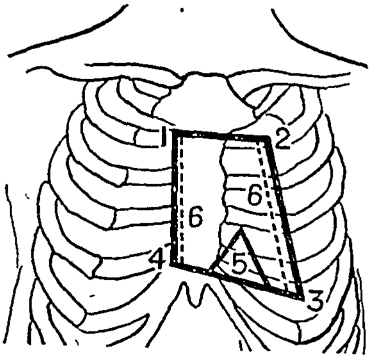
AFFECTIONS OF THE GALL-BLADDER AND CARDIAC PAIN

To the Editor of THE LANCET

SIR,—The communication by Dr. Charles H. Miller on this subject to THE LANCET of April 9th leaves little room for discussion, because of its informatory value, but I should much like to suggest that the term "cardiac pain" is a positive assertion relating to a particular organ. For the last 25 years I have in my notes used the words "cardiac area pain," a term which expresses a symptom, and that a diagnosis has to be made.

In general practice, where scientific niceties sometimes have to go by default, it is more necessary to have a definite clinical basis to work upon. A cardiograph is not easily read. Blood pressure is a will-o'-the-wisp, and only of value after many records have been taken and with full consideration of the circumstances occurring before making them. The size and position of the heart, in spite of a definite departure from anatomical correctness, may be the normal condition of the individual.

To assist in drawing the right lessons from "heart area pain" and accompanying skin tenderness (if any), I make a surface plan, showing six places or points in the cardiac area, the inner end of the right costal cartilages and the outer end of the left costal cartilages forming the lateral boundaries. To each point I attach a mental signpost, on which are recorded various common diseases. The diagram is a quadrilateral with four anatomical corners (points) and one triangular space in the middle third of the base line, the apex being above the line. The points are: (1) the junction of the right second costal cartilage and the sternum; (2) at the junction of the left second costal cartilage with the rib; (3) at the centre of the left fifth intercostal space in the line of juncture of the costal cartilages and ribs; (4) at the junction of the right sixth costal cartilage and the sternum. These four points are joined up with a skin pencil. (5) The middle third of the line 3—4 corresponds to the base of an equilateral triangle; (6) represents all the costal cartilages in the area.



Against these figures I visualise the following diseases, and proceed to verify a distal heart hint into possibly a local truth: (1) and (2) Aortic, heart, and thymus disease. (3) Mobile kidney, liver, spleen, diseases of rectum and anus with occasional shooting pain along line 2 to 3. Diseases of the gall-bladder also show hyperæsthesia of the *right* fifth or sixth intercostal nerve. (5) Stomach and duodenum affections. (6) Hyperæsthesia and pain over the costal cartilages suggest pleuritic adhesions and neurosis, such as follows an old herpes zoster. Late manifestation of diseases mentioned under above headings show one or more tender cartilages. In advanced diseases all six points may participate as reflex phenomena.

I will add three illustrative cases:—

(1) In the late spring of 1922 Sir Fredk. Treves
to see him during a visit he was paying to We
I was then in practice in Dorchester. He was co
of cardiac distress, and was very nervous about his
He referred his pain to the area I have described a
in the diagram; also there was a tender right sixt
costal nerve. I assured him he had gall-bladder
he did not agree, and was confident his heart was
In December, 1923, he died from a perforated gall-b

(2) Dr. K., aged 65, complained of cardiac area
and shortness of breath—he had a sensitive No. 3 a
tender right sixth intercostal nerve. He would no
that his gall-bladder was the cause. Nine month
at 3 A.M., I was sent for. He was suffering from
abdominal pain and retching, which he persisted in
appendicitis. His general collapse was so serious
surgical measure could be contemplated. Ten day
in consultation with the late Dr. Hyla Greves and
approval, I removed a gall-bladder containing abo
stones, ranging in size from a split pea to a small
He made a good recovery.

(3) Dr. C., aged 56, was cranking up his car a
seized with acute upper segment abdominal pain; o
later he motored home five miles. I saw him in cons
with his partner, and found a very sensitive fifth a
board-like abdominal muscles; he declared he h
pain." His contracted pupils led me to ask him how
morphia he had taken; he owned up to half a
Within three hours I opened his abdomen, and f
rupture of his duodenum. He recovered.

My diagram I have found more useful in early
when the reflex phenomenon of heart area p
always greater from remote disease than wh
heart is the primary cause.

I am, Sir, yours faithfully,

Tunbridge Wells, June 14th, 1932. W. B. Cos

AMBLYOPIA OR FATIGUE?

To the Editor of THE LANCET

SIR,—The annotation with this heading in
issue of April 9th (p. 789) misrepresents the poi
view taken in my paper on Amblyopia in the
issue (p. 774), where I am said to claim "to
cured many cases of amblyopia associated
weak converging power by treatment by mea
prisms calculated to increase the power of the
verging muscles." Herein lies the misconce
of my hypothesis, because astheno-vergence is
due to weakness of the converging muscles but t
weakness of response to its natural stimulus
reflex controlled by a centre situated in the b
In the paper reviewed and in my previous publica
there is not a single indication that I have
given treatment calculated to increase the
of the converging muscles. I have never met w
case of astheno-vergence (weakness of involu
convergence) due to weakness of the ocular mu
On the contrary I have often drawn attention t
fact that weakness of the eye musculature is
of the question in the diagnosis of astheno-verg
Your annotation says:

> "We would suggest to Dr. Stutterheim that the
> amblyopia is hardly a suitable one for a psychical con
> that affects both eyes, and that any measures that pr
> an amelioration of this condition are effective not so
> through the muscles as the mind."

But I have *taken great* care to point *out that*
vergence (the visual reflex) is not a muscular func
of "low level" in the hierarchies of the brain or m
as for instance adduction, which can be prod
probably even by the lowest mammals, but a func
of the highest mammalian minds—a kinetic functi
very high rank—one of the three chief factors
use the words of Sherrington, of man's outstrip
other competitors in progress towards that
which seems the universal goal of animal behavi